

This is Gemini Launch Control. T-240 minutes and counting. T-240 and counting on the Gemini 9-A mission. At this point in the countdown, the Gemini Launch Vehicle has just joined the countdown. The spacecraft of the Gemini ...spacecraft started about 2:30 a.m. this morning, that is 2:30 EST at the 360 minute mark in the count. So, we now have the launch vehicle in, all the major elements are in the count at this point and all is going very well.

The Gemini Launch Vehicle was fueled last night in an operation that took about three hours and 15 minutes. Since the spacecraft count was picked up earlier this morning, all is going well.

The backup pilots for the mission, Astronauts Jim Lovell and Buzz Aldrin are aboard the Gemini Spacecraft making their checks. They have been in there for about two and a half hours at this time. They will continue all the preliminary checks pending the arrival of the prime pilots, Tom Stafford and Gene Cernan, later in the countdown. Stafford and Cernan should be up at this time and taking their physical and probably about to start breakfast. We will have a report on that as soon as we get that information on it. All going well now at T-238 minutes, 43 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control T-235 minutes and counting. All going well in the Gemini 9 countdown at this time. We now have confirmation that the prime pilots for the mission, Tom Stafford and Gene Cernan were awakened in their Crew Quarters at the NASA Kennedy Space Center, Merritt Island, as planned in the astronaut countdown at 11 minutes passed the hour. They are just completing their physical examination at this time and will be sitting down to breakfast in about 5 minutes, or so. All going well with the astronauts in the Crew Quarters and with the countdown at Launch Complex 19. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-208 minutes and counting. 208 and counting and all is going very well at Launch Complex 19 at the present time. The prime pilots for the Gemini 9-A mission, Astronauts Tom Stafford and Gene Cernan, are just about finishing up their breakfast at this time. They have one guest for breakfast at the Crew Quarters at the NASA Kennedy Space Center in Merritt Island, and that is Donald K. Slayton, who is Director of Flight Crew Operations for the NASA's Manned Spacecraft Center.

Stafford and Cernan took their brief physical again a short while ago. Doctor Duane Catterson, who directed the physical, reported that there is no change in the status of either of the astronauts physically since their last physical two days ago. Both pilots were described as being in excellent spirits, as usual.

We have some weather conditions, which we'll go over extensively at this point, to cover the Cape area and the various contingency landing areas throughout the ground track. The weather forecast for launch time in the Cape Kennedy area is as follows: Scattered clouds, at about 3000 feet, winds from the northeast at 15 knots, a sea state off shore at four feet and a temperature expected to be about 75 degrees. In the Atlantic, we have acceptable landing conditions throughout, however, if we launch during the first window, we will overfly a rather extensive area of showers in the western Atlantic. If we launch in the second window, we will fly the west Atlantic showers as well as the shower area just north of the equator. In the mid-Pacific some 300 miles northeast of Honolulu, the forecast is for scattered clouds, winds from the east at 15 knots, a sea state of five feet. Western Pacific landing zone. About 700 miles southeast of Tokyo, overcast sky with occasional rain, winds from the southwest, 12 knots, a sea state of four to five feet. In the eastern Atlantic landing zone, some 500 miles west of the Cape Brady Islands, the forecast is for scattered to broken clouds, winds from the northeast at 12 knots, sea state of four feet. And in the prime landing in the west Atlantic, some 500 miles east of Miami also a forecast of scattered clouds, winds from the southeast 15 knots. All proceeding

(2)
GEMINI 9-A/MISSION COMMENTARY 6/3/66, 4:07 a.m.

Tape 3, Page 2

Well on the countdown at this time. The breakfast menu for astronauts Stafford and Cernan, was the usual astronauts fare of a choice of juice, fillet mignon, scrambled eggs, toast and coffee.

Coming up on T-205 minutes and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control T-204 minutes and counting. T-204 and counting, and all proceeding excellently in the Gemini 9 countdown at this time. At Launch Complex 19 things are going well with both the Gemini spacecraft and the launch vehicle since the count began some 2 hours and 40 minutes ago. The back-up pilots for the mission, astronauts Jim Lovell and Buzz Aldrin have left the Gemini spacecraft, they have been in there for about $2\frac{1}{2}$ to 3 hours and they will be back a little later in the count to make the final check and report to the prime pilots, Tom Stafford and Gene Cernan at the white room. Stafford and Cernan as reported earlier were awakened at the planned time in the countdown for 11:00 a.m. Eastern Standard Time. They've taken their physical and are just about finishing up breakfast at this time. They're due to depart their quarters at the NASA Kennedy Space Center at Merritt Island at 21 minutes past the hour, to proceed to the ready room to don their suits and make the final preparations for the mission. All going well in the count and all going well in the Crew Quarters at this time. T-202 minutes and 50 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-194 minutes and counting.

T-194 all proceeding very satisfactorily with our checks at complex 19, with the Gemini spacecraft and launch vehicle. Astronauts Tom Stafford and Gene Cernan should be just about on their way now from the Crew Quarters at the NASA Kennedy Space Center Merritt Island, and starting the drive of some 7 miles to the ready room at Launch Complex 16 where they will don their space suits and make their final checks prior to departing for the launch pad at about 125 minute mark in the countdown. Their back-up pilots Jim Lovell and Buzz Aldrin have left ~~the~~ Gemini spacecraft they have been in it for some 2 hours and 45 minutes. As we prepare for the pressurization of the launch vehicle at 19, the complete area has to be evacuated at the time of pressurization of the launch vehicle, which is when we pressurize with the nitrogen at about 170 minutes into the count. Lovell and Aldrin will return to the spacecraft when the area is clear to make the final checks, and then they'll be ready to report to the prime pilots when they arrive at the white room. Our count with the Gemini Launch Vehicle also going very well, it was fueled in about 3 hours and 15 minutes last evening. Now, T-192 minutes and 35 seconds and counting. This is Gemini Launch Control, we'll now switch to the Mission Control Center in Houston.

HOUSTON.....This is Gemini Control Houston. Our status board on the Manned Space Flight network is completely clean, in other words there are no pieces of equipment that cannot support the mission. At the present time the ^{augmented} target docking adapter

is nearing the end of the 27th revolution. It's present measurements in orbit are 161.9 nautical miles apogee, 161.5 nautical miles perigee; within 4/10 of a mile of being perfectly circular.

Here in Mission Control the ~~Green~~ team of Flight Controllers that's been here since 9:30 Central Standard Time last night is still carrying the ball and the White team, the launch team, will be in, in about an hour. At T-191 minutes and 30 seconds this is Gemini Control.

END OF TAPE

This is Gemini Launch Control. T-184 minutes and counting. T-184, all going very well at this time. Astronauts Tom Stafford and Gene Cernan should be just about arriving at this point at the Ready-room at Launch Complex 16. They have cleared the White-room at the 109 foot level at Launch Complex 19 in preparation for the launch vehicle pressurization, which will be coming up in about 10 or 15 minutes from this time.

Above the spacecraft in the White-room, just above the hatches, located just between the two hatches so that it covers both of them if you will, there is a sign located above the hatches. The sign has two little ~~rhyming~~ couplets on it and it reads as follows, " WE WERE KIDDING BEFORE, BUT NOT ANYMORE. GET YOURSELF INTO SPACE OR WE'LL TAKE YOUR PLACE." And it is signed Jim and Buzz, of course for backup pilots Jim Lovell and Buzz Aldrin. All is proceeding very well at this point as far as the Gemini Launch Vehicle is concerned. We've just made some checks on the radio command guidance system, these checks appear to be going well.

T-182 minutes, 46 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-174 minutes and counting -- T-174. All going very well at this time at Complex 19. We'll be coming up on our launch vehicle pressurization some five or ten minutes from this time. This is when we pressurize the propellant tanks in the Gemini launch vehicle -- both stages -- with nitrogen building up to some 30 pounds per square inch in the first stage and about 50 to 55 pounds per square inch in stage number two. We have made one slight jump in the countdown, if you will. We're -- an event scheduled for the 60-minute mark in the count is occurring at this time. This is the so-called POGO activity in which we permit the oxidizer in the second stage to flow into a stand pipe -- a stand pipe that's specially built in the second stage area -- in order to suppress oscillations that could occur in the oxidizer system of the second stage. This usually comes at the 60-minute mark in the count. This is when we would open the prevalue -- the oxidizer prevalue -- to permit the flow of that nitrogen tetroxide oxidizer into the stand pipe area so that we will be able to suppress these oscillations; since the prevalues were opened on Wednesday's launch attempt and since they are still open at this time, the crew decided to go ahead with this particular test earlier, and it is in progress now. Astronauts Tom Stafford and Gene Cernan are at the ready room making their final preparations. They'll come to the pad some 30 minutes from this time. T-172 minutes, 14 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-164 minutes and counting. T-164. We've now completed our pressurization of the Gemini Launch Vehicle. All is looking well, and on our early checks since completing our pressurization a short while ago, show that we are getting good readings on the pressure in both stages. The backup pilots, Astronauts Jim Lovell and Buzz Aldrin, now have returned to the Gemini spacecraft. They spent some two hours and 45 minutes in it earlier and will go through some further checks pending the arrival of the prime pilots, Tom Stafford and Gene Cernan.

All is going well in our countdown at the present time. We'll now switch you to the Mission Control Center in Houston.

This is Gemini Control. The augmented docking adapter is now on its 28th revolution. It is over the north central portion of Africa. Earlier we reported that the network status was completely green, since that time a teletype transmitter at the Woomera, Australia station is apparently on the fritz, but the station can support, however.

A short while ago, Mr. Allen Sandy Sanderson, of the Space Flight Meteorological Group, here in Mission Control briefed the Mission Director and the Flight Director on the global weather picture. At T-162 minutes and 32 seconds, this is Gemini Control.

END OF TAPE

This is Gemini Launch Control at T-154 minutes and counting, T-154. All still proceeding very well with the countdown at this time. At Launch Complex 19, they're in the midst of a guidance control test between the mark 3 Burroughs computer and the Gemini Launch Vehicle. It appears to be going well at this time. Because of the problem we had on Wednesday that we scrub the launch that the ground support failure concerns with up-dating the spacecraft computer, we're going to make some extra checks and some extra data reports into the computer during today's countdown. The computer at the Mission Control Center in Houston will feed data up-date to the Gemini spacecraft computer here at Launch Complex 19, at the T-60 minute mark, T-30 minutes, T-15 minutes. We will feed the regular real-time up-date as we resume the count of T-3 minutes as reported yesterday the present plan is if we fail to get that up-date to the spacecraft T-3, we will still continue with the countdown and launch, using the latest data we have in the computer at that time. All is going well at T-152 minutes, 40 seconds in counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-144 minutes and counting. T-144. All going well with the Gemini 9 countdown as it has been since the count picked up at about 2:30 EST, this morning.

The backup pilots, Jim Lovell and Buzz Aldrin, still in the Gemini 9 spacecraft, in the White room in Launch Complex 19. They are reporting readouts at the present time to the blockhouse on a number of different items in the spacecraft's system. The prime pilots, Tom Stafford and Gene Cernan, are still in the Ready-room at Launch Complex 16, nearby making the final preparations before departing for the Launch Complex in about 15 minutes from this time. All proceeding very well at T-143 minutes, 10 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-134 minutes and counting. All still going very well at Launch Complex 19, and in the Ready-room at Launch Complex 16, where the astronauts, Tom Stafford and Gene Cernan, now have their space suits on and are making final purge checks prior to departing from that area due on the countdown in about eight minutes from this time.

We're now aiming for a launch time of 11:39 and 33 seconds a.m. EST. We will have a built-in hold at the T-3 minute mark in the count.

At Launch Complex 19, they've gone through a status check for..of preparing for arrival of the prime crew. The crew will be inserted in the spacecraft at about the 115 minute mark in the count. Backups Jim Lovell and Buzz Aldrin still are in the Gemini spacecraft, as they have been for some...now a total time of some three and a half hours this morning, continuing the final checks and awaiting the arrival of the prime crew.

All systems looking good at T-132 minutes and 50 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control T-131 minutes, 42 seconds and counting all still going well at the pad. To correct the launch time maneuver, announced launch time we're aiming for, is 8:39 and 33 seconds a.m. Eastern Standard Time. We'll have a hold at the T-3 minute mark, it's expected this hold will last some 4 minutes, or a little more than 4 minutes at that time. Aiming for launch time again at 8:39 and 33 seconds a.m. EST. Now T-131 minutes, 10 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-123 minutes and counting. Astronauts Tom Stafford and Gene Cernan are on their way to Launch Complex 19 and their Gemini 9 spacecraft. Just a matter of moments ago, they departed from the Ready-room at nearby Launch Complex 16 and will be at the elevator at 19 in a matter of a few minutes. Meanwhile at the Launch Pad, itself, we've gone through some status checks, some final status checks for a crew ingress, all major activities reported that they were go for Crew Ingress, this is the two pilots coming aboard the spacecraft about seven or eight minutes from this time.

We've completed a purge of the fuel cell of the Gemini spacecraft and it is also in a go position. About five minutes ago, the backup pilots, Jim Lovell and Buzz Aldrin exited from the spacecraft. They had come aboard shortly after 2:00 a.m. this morning and had spent most of the morning in the spacecraft making all the preliminary checks. They will be ready to report to Stafford and Cernan on their arrival in a matter of minutes from this time. T-121 minutes, 49 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-119, 13 seconds and counting. Astronauts Tom Stafford and Gene Cernan are now in the White Room -- the 102-foot level at Launch Complex 19 ready to go aboard the Gemini spacecraft momentarily. They are getting a quick briefing from their pad leader and from the backup crew, Astronauts Jim Lovell and Buzz Aldrin. Shortly they will be going over the shelf into the spacecraft itself. The pilots were awakened this morning at 4:11 EST. They took a quick physical. Dr. Duane Catterson reported that once again they were physically fit and in good spirits as usual. They sat down for breakfast, had the usual menu of a choice of juice, filet mignon, scrambled eggs, toast and coffee. Their one guest at breakfast was Deke Slayton, who is Director of Flight Crew Operations for the Manned Spacecraft Center. The astronauts departed the quarters at the NASA Kennedy Space Center Merritt Island about 5:21 A.M. EST, arriving at Launch Complex 16 some 30 minutes later. They spent the remainder of the time at the Ready Room at 16 donning their suits and making the final checks. They are now both aboard the spacecraft at this time, and the technicians will make the early preparations hooking them up electronically into the systems, and the Flight Surgeon is standing by in the Block House to start the first stage of tests which will be biomedical tests with the two astronauts in the spacecraft. There also will be a communications check as the starter. All systems still going very well. T-117 minutes, 30 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control at T-114 minutes and counting. T-114, all still proceeding very ery well in the white room at Launch Complex 19. The countdown which now has been in progress for some $4\frac{1}{2}$ hours is still going very well. Tom Stafford and Gene Cernan are being electrically connected into their cockpit, and should be coming on the line shortly to talk to the block house and Astronaut Bill Aldrin, who is Stoney, or the Spacecraft Communicator, located in the block house. All our check outs are still going very well at this time. We're aiming for a launch time of 8:39 and 33 seconds a.m. EST, under the present ~~parameters~~. We will hold at T-3 minutes for 4 minutes and 29 seconds. I want to correct one statement I made, Stoney, the Spacecraft Communicator is Bill Anders in the block house. Bill Anders is the communicator who will be talking with the pilots in the final phases of the count. T-112 minutes, 53 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-104 minutes and counting. 104 and counting. All still proceeding very well in this countdown, which has now been in progress about four and a half hours. The hatches on the Gemini spacecraft were just closed a matter of a minute or so ago. Tom Stafford, the command pilot's hatch was first closed at the 105 mark and about 10 seconds later, the pilot's, Gene Cernan, had his hatch closed. All is still proceeding very well at this point.

When the astronauts came into the White room, they brought a prop along with them. It was about two feet long and it was in the shape of a match. The crew requested that this match be brought back down from the White-room and presented to Martin Company Test's Conductor, Frank Cherry. Signifying that they want to have the match to help Frank to get the launch vehicle off today.

T-103 minutes and five seconds and counting. We now switch you to the Mission Control Center in Houston.

This is Gemini Control in Houston. At our Control Center, the white team of flight controllers have reported for duty and are manning the consoles at this moment. Our target vehicle is nearing the end of its 28th revolution and is now passing over the central Pacific. It's apogee is 161.9 nautical miles by 161.5 nautical miles. Our flight controllers are now standing by and will pick up, that is the flight team will pick up the control of this mission. Also on hand here at Mission Control is Chris Kraft our Director of Flight Operations, who has just come into the room. This is Gemini Control at 102 minutes, 14 seconds before the launch

END OF TAPE

This is Gemini Launch Control, T-94 minutes and counting. T-94 all still proceeding very satisfactorily at Launch Complex 19. Astronauts Tom Stafford and Gene Cernan now getting settled in their Gemini 9 spacecraft, and we're in the process of purging the spacecraft to bring it to 100 percent oxygen environment. Meanwhile in the block house the crew is completing the checks on the final status of the spacecraft as far as the white room is concerned, and the crew in the white room will be ready to depart shortly as we begin the so-called break-down separation for the erector lowering, which will come in a matter of 10 or 15 minutes from this time. The astronauts have checked into the countdown and part of the over-all countdown, it all appears to be going well at the time. T-93 minutes and 7 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-84 minutes and counting. All is proceeding very well at Launch Complex 19. Astronauts Tom Stafford and Gene Cernan reporting to the blockhouse of some of the early events of their checkouts during this final phase of the countdown.

The launch crew in the blockhouse is about to start some Airborne Guidance checks. between test kit in the blockhouse that simulates the General Electric Burroughs Command Guidance System and the Airborne Guidance System in the launch vehicle, itself.

All is proceeding very well at this time. We're still aiming for a launch time of about 8:39:33 EST, with a planned built-in hold of about four minutes and 29 seconds at the T-3 minute mark in the countdown. We now switch you to Gemini Mission Control in Houston.

This is Gemini Mission Control in Houston. Our target has now begun its 29th revolution. We have a report from the Wasp, the carrier located in the landing area designated PLA 1, the primary landing area. The Wasp is in its launch position, 500 statute miles southeast of Bermuda and approximately 1200 statute miles east of the Cape. Wasp reports that the weather is beautiful, with scattered clouds, visibility 10 miles, waves three feet in height, winds are southeast at eight to 15 knots, the temperature is 79 degrees F. This is Gemini Control, 82 minutes and 20 seconds prior to lift-off.

END OF TAPE

This is Gemini Launch Control T-74 minutes and counting. T-74 all still proceeding very well. The pad leader in the white room just reported just a few moments ago, that he, the last man in the white room was just about to leave. The white room is now being evacuated in preparation for lowering the 138 foot erector that still surrounds the Gemini Launch Vehicle and spacecraft at this time. Tom Stafford has reported in that it feels nice and cool in the spacecraft at this time, and now up to a 100 percent oxygen in the spacecraft and they have had permission to open their visors. Our count is continuing, all looking good. In the mean-time in the block house we're making some checks with the Air Force Eastern Test Range, and with the Mission Control Center in Houston to be sure that all of these key locations, will receive the lift-off signal occurs as planned at 8:39 and 33 seconds a.m., EST this morning. Now coming up on T-73 minutes and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control coming up on T-64 minutes and counting. T-64 everything still going very well with our countdown. The augmented target docking adapter now in the early phases of its 29th revolution, and in the spacecraft at Launch Complex 19, the astronauts Tom Stafford and Gene Cernan has completed their check of all Switch List checks. This is a/switches in the cockpit to insure that they are in the proper position, for launch. Stafford also has just completed a series of ultra-high frequency communications checks from the spacecraft. We'll be coming up in a matter of a minute or so on a Status check for the erector lowering, this will be followed in about seven or eight minutes by bringing down that 138 foot erector, at Launch Complex 19. All is still proceeding very satisfactorily as the countdown has all morning. T-63 minutes, eight seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-57 minutes, 13 seconds and counting. The 138 foot erector is now coming down at Launch Complex 19. When they first saw the sky as the erector moved back, Gene Cernan exclaimed, "Oh, boy" and Tom Stafford looking up declared that "it was a great day". The erector is now coming down, this is about a 10 minute operation.

The erector was run by a 150 horsepower motor in a winch system which first eases the erector back from the spacecraft's combination and then acts as a brake as it eases the erector down to its down position at the pad. The operation should take about 10 minutes if all goes well, in the meantime the remainder of the aspects of the count going on at this time are all going well. T-56 minutes, 18 seconds and counting. This is Gemini Launch Control.

END OF TAPE.

This is Gemini Launch Control T-54 minutes and counting, T-54 and all going well with the countdown at this time. The erector is approaching its down position at the launch pad, all is going well with the erector lowering. As the astronauts Tom Stafford and Gene Cernan continue their check-outs in the spacecraft reporting back to the block house. Once we do get the erector down we will continue down with the count with some of the highlights being a report from the Flight Director at the T-40 minute mark on the status of the ATDA which is coming around its 29 revolution. We will also test the propulsion system in the spacecraft at about the 20 minute mark. We're aiming toward an ignition of T-0 of the Gemini Launch Vehicle at 8:39 and 30 seconds a.m. EST. Lift-off will come 3 seconds after ignition or 8:39, 33 EST. A built in hold to coincide our launch with the ATDA in orbit will be declared at the 3 minute mark in the count, duration of the hold, 4 minutes and 29 seconds. Now T-52 minutes and 43 seconds in counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-44 minutes and counting. T-44. Our countdown continues to proceed very well at this time. From their perch in the spacecraft at Launch Complex 19, Astronauts Tom Stafford and Gene Cernan took a moment to look out a short while ago. They commented on a cloud that was passing over the spacecraft and Gene Cernan said from his location he could look over the beach at Cape Kennedy. He noted that the sun was shining and it looked very beautiful over there on the beach. He also noticed a helicopter in the area, it was heading the general direction toward Launch Complex 19. As far as our computer situation is concerned today, we thought we'd mention a few facts about it at this time. In view of the problem that did cause the postponement of the launch on Wednesday, we will update the computer, the spacecraft computer, with the proper flight parameters in the following manner. We will feed the data directly from the computer at Houston. We've already done this once at the T-60 mark. There will be direct feeds from the Houston computer to the spacecraft at T-30 and T-15 minutes in the count. After our hold at T-3 minutes when we resume the so called automatic update, will come from the GE Burroughs computer system here at the Cape and it will be fed through the ground support system, winding up with a signal being generated to the spacecraft. If, as on Wednesday, this signal is not received by the spacecraft computer, we will continue the countdown using the latest update data that the computer already has stored and launch with that update data. We are still preceeding very well with the countdown. We're a number a minutes ahead on certain events. It's very possible that the so called static test of the spacecraft propulsion system which is due at the 20 minute mark in the count may come earlier.

As soon as the crew in the spacecraft and the crew in the blockhouse are ready, they will proceed with that test. We do not have a time on it now, but it may come earlier than the planned 20 minute mark in the count. We will now switch to the Gemini Mission Control Center in Houston.

This is Gemini Control in Houston. Our target vehicle at this time is on its 29 revolution. It is now coming up over the Carnarvon tracking station over Australia. Or at least within range. The target actually is still on a - off the west coast of Australia. Here in Mission Control our Flight Director has green and GO buttons from all his controllers. The countdown is proceeding and our Flight Director and our Flight Controllers are taking part in that countdown. Flight Director on duty with the White Team is Gene Kranz. Our Spacecraft Communicator this morning will be Astronaut's Neil Armstrong who is primary and Astronaut Dick Gordon assisting him. Mission Director, William Schneider of the Office of Manned Spaceflight in Washington is here and at his console as is our Flight Surgeon Dr. Owen Coons who will be on duty with the White Team this morning. In the viewing room early today were Dr. Robert Gilruth, Director of Manned Spacecraft Center and George Low our Deputy Director. This is Gemini Control in Houston, 40 minutes, 37 seconds before liftoff. We are green and GO in Houston.

END OF TAPE.

This is Gemini Launch Control. T-34 minutes and counting. T-34. All still going excellently on Launch Complex 19 and our Gemini 9 countdown. As the ATDA target continues to swing around on its 29th revolution. At this point in our countdown, we are going through a series of flight control checks with the Gemini Launch Vehicle and overall telemetry checks between the launch vehicle and the Air Force Eastern Test Range Tracking Elements. During this phase of the count also, the automatic sequencer, the so-called master operations control system, has come into effect in the Gemini countdown. This is the sequencer that controls and commands many of the actions that will occur over the final phases of the count. It will command some ten activities and monitor some 25 of the functions until we get to the T-5 minute mark and then we have a completely automatic operation from T-5 down to ignition and liftoff. All systems and all checkouts still going very well at the Pad at the present time. At T-32 minutes and 50 seconds and counting, this is Gemini Launch Control.

END OF TAPE

MISSION COMMENTARY, 6/3/66, 7:11 a.m.

Tape 25, Page 1

This is Gemini Launch Control, T-24 minutes and counting. T-24. We're still a little bit ahead on certain aspects of the countdown, however, this will have no effect on our launch time whatsoever. It remains at 8:39 and 33 seconds A.M. EST. It has been reported a short while ago that we will be going on an azimuth of 87.4 degrees. In the meantime, we have completed testing of the spacecraft propulsion system, these are the thrusters at the base of the adapter of the Gemini spacecraft. We have fired the thrusters in a series of tests and that has been very satisfactory. These are the 25-pound thrusters at the base of the adapter and the astronauts have fired the thrusters to check them out in the three modes of yaw -- two modes of yaw and pitch. This is the propulsion system that will be used by the spacecraft in orbit. All is still going well. The thruster test, as reported, has been completed and now at T-23 minutes and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Control T-14 minutes and counting. Here in Mission Control in Houston, we have had a final status check. Our Flight Controller, Gene Kranz, has received a green go from all his flight controllers. We also had a communications check with the worldwide tracking network and communications are loud and clear at all points. Our target vehicle is now in its 29th revolution over the Pacific Ocean, apogee 161.9 nautical miles, perigee 161.5 nautical miles. We launch this morning on an azimuth of 87.4 degrees to the northeast. And during the lift-off, we will attempt to note for you the liftoff time the start of the spacecraft clock which is synchronized with our ground clocks. The start of the roll program which is supposed to start at 19 seconds, the start of the pitch program, cabin pressure will give you a 50 second mark at which time the spacecraft and its launch vehicle will be moving 740 miles per hour or supersonic. We will note BECO, the booster engine cutoff point eight or 80 percent of the velocity needed for insertion at this time we are moving 18,000 feet per second. We will also note SECO, second stage engine cutoff and we will note whether we get a go for IVAR, which means that Tom Stafford will do the insertion velocity adjustment routine, firing his thrusters to correct any small inplane and velocity discrepancy, the go for IVAR will be given by our Flight Dynamics Controller, Ed Pavelka. At this time we turn you back to the launch team at the Cape.

This is Gemini Launch Control at T-12 minutes, 15 seconds and counting. All still going very well on the countdown at Launch Complex 19. During that status check on the spacecraft that was reported from Houston, the Command Pilot also checked in, Tom Stafford and reported that it looked very good. Here in the Control Center at the Cape now the backup pilots, Jim Lovell and Buzz Aldrin, along with Deke Slayton and Astronaut Pete Conrad are sitting near the old Cap Com position in the Mission Control Center, following the mission from here. At the launch pad, we are about to start one of the final key guidance checks between the Mod 3 Guidance System here at Cape Kennedy and the Gemini Launch Vehicle. We are getting reports that all is still going very well in the count at this time. T-11 minutes and 26 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control, T-9 minutes and counting. All still going very well at Launch Complex 19. The Launch Vehicle Test Conductor has reported to all stations that we will have the planned built in hold at the three minute mark. Duration of the hold about four and a half minutes. Coming up in the countdown will be a status check of the various recovery systems by the Launch Vehicle Test Conductor. This is checking in with the various recovery elements including the helicopter. T-8 minutes and 31 seconds and counting. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. T-4 minutes and counting T-4. We will be going into a planned built-in hold in the three minute mark in the count. Duration of the hold about four and a half minutes, aiming toward an ignition of the Gemini Launch Vehicle at 8:39:30 EST. We've gone through a whole series of status checks over the last several minutes. This included crewman one and crewman two in the spacecraft. Tom Stafford, when he reported in, used the term that his command pilot, Wally Schirra, used on the Gemini 6 Mission when it finally was launched. Stafford reported, "For the third time, Go," when he gave his status report. Gene Cernan reported a little after that as he thanked the crew for their efforts and suggested that they all take a vacation, but then pointed out that they shouldn't start until about two seconds after ignition which, of course, would be just prior to lift-off of the Gemini vehicle. Now coming up on the hold. T-3 minutes and holding. T-3 minutes and holding. The hold is expected to last for about four and a half minutes. We'll be resuming the countdown at 36 minutes and 30 seconds after the hour. This is Gemini Launch Control.

END OF TAPE

This is Gemini Launch Control. We're still at T-3 minutes and holding. Our checkouts during the hold period at the present time, all going well. We'll be picking up the count in about two minutes from this time, aiming towards a liftoff of 36 minutes and correction 39 minutes and 33 seconds after the hour. Once we do pick up the countdown one of the first activities once again will be the so called computer update. This is a feed from the GE Burroughs Guidance System to some ground systems here at the Cape and finally by radio frequency signal to the spacecraft itself. If this does not occur, if the information is either rejected or if the signal does not get to the computer as occurred on Wednesday, we still will continue our countdown and go with the update parameters that were loaded aboard from Houston at the T-15 Mark in the countdown. All systems still going well at this time. During the final phases of the count, we're all on an automatic sequence at this time. The supervisor of range operation will give a clear to launch at about 2 minutes and 30 seconds. The power transfer will go on internal power to vehicle at one minute and 30 seconds and counting. The engines will be gimbaled both two - ah thrust chambers on the first stage of the Gemini will be gimbaled at one minute 20 seconds. The astronauts will be alerted of this because they will be able to feel this motion, in the Gemini spacecraft. The prevalves in the second stage that permits the oxidizing fuel to operate in the second stage will be opened at the 35 second mark. We'll get ignition at the zero mark in the countdown with a liftoff about three seconds thereafter. We'll be picking up the count shortly, still T-3 minutes and holding at this time. About five or six seconds from now we will resume

the countdown. This is Gemini Launch Control, T-3 minutes and counting. T-3.

(PAUSE)

This is Gemini Launch Control, now at T-2 minutes and 30 seconds and counting. We have word here in the control center that the spacecraft computer has accepted the update information from the Mod three system. Of course informations also gone by hardline to the Gemini Launch Vehicle. T-2 minutes and 15 seconds and counting. The Air Force Eastern Test Range has given the blockhouse an OK to launch at this point. Coming up at T-2 minutes.

(PAUSE)

This is Gemini Launch Control, T-1 minute, 40 seconds and counting. We have a report that there was a switch over in Houston but now we have confirmation that the update data is in the computer. The computer has accepted this update data at T-1 minute and 30 seconds and counting. T-1 minute and 20 seconds and counting. All appears to be proceeding well at this point in the countdown, during the final phases. The astronauts have been alerted and we have gimbaled those engines as planned. The engines have swung, the first stage engines and our checkout still continues at this point. Coming up on 1 minute. T-60 seconds and counting. T-60. T-50 seconds and counting. We will get ignition at zero in the countdown, some three seconds thereafter liftoff will come. During that period there will be a period of about 1.8 seconds where we possibly will have the capability of shutting down if necessary. T-35 seconds and counting. T-30. T-25 seconds and counting, we're on an automatic sequence, everything appears to be going well during this final phase. T-20 seconds and counting. T-15, T-10, 9, 8, 7, 6, 5, 4, 3, 2, 1, zero. We have ignition.

We have a liftoff. It looked like 39 minutes, 32 seconds after the hour. T plus 17 seconds.(T+17). Flight Dynamics reports the thrust looks good. The roll program has started. Roll program is completed. The pitch program has started. We have a liftoff time confirmed at 39:33 after the hour. We have reached 50 seconds into the flight. Spacecraft and its booster are moving at 740 miles per hour. We are now reaching for four nautical miles in altitude. T plus 1 minute and 20 seconds. The spacecraft is now approximately at the eight nautical miles in altitude the track looks good. We are about five nautical miles downrange. T plus 1 minute and 45 seconds and we are at 12 nautical miles downrange and approximately 16 nautical miles in altitude. The track still looks very good. T plus 2 minutes, 20 seconds. The flight crew have been notified that they are GO for staging. Spacecraft is now about 52 nautical miles - 50 nautical miles downrange and about 36 nautical miles in altitude and we have BECO, Booster Engine Cutoff. The thrust looks good. The track looks good. T plus 2 minutes, 50 seconds. Guidance Officer reports that the track looks real good to him. Flight Dynamics, Guidance and Surgeon all report that they look good. The spacecraft now is approximately 120 nautical miles downrange and approximately 60 nautical miles in altitude. Flight Dynamic says we're right down the middle. The vehicle is now about 70 nautical miles in altitude and approximately coming up on 200 nautical miles downrange. The track looks good, excellent. Flight Director, Gene Kranz has just completed a final status check. We are green and GO and that information has been passed on to Tom Stafford in Gemini 9. Gemini 9 is now 280 nautical miles downrange and approximately 80 nautical miles in altitude.

END OF TAPE.

....280 nautical miles down range and approximately 80 nautical miles in altitude. T+5 minutes. Track looks excellent. Gemini 9 is following our plot boards here perfectly. Point 8. We have reached 80% of the velocity needed for orbit. Flight Dynamics says the trajectory looks very good to him. T+5 minutes and 30 seconds. SECO. The second stage engine has cut off. Flight Dynamics has given a go for IVAR and that is being passed on to Tom Stafford by communicator Neil Armstrong. Go for IVAR. Stafford will burn his thrusters to correct any small in-plane and velocity discrepancies. (Pause)

T+6 minutes and 40 seconds. The indication from our Flight Dynamics Officer is that Tom Stafford is thrusting aboard Gemini 9. The thrust shows now, has been turned off. The thrust is off. Flight Dynamics says he looks real good. We are seven minutes, 37 seconds into the flight. According to our plot board data here, Gemini 9 should be in orbit. We do not as yet have any orbital values. As soon as we get them here we will pass them on to you. Meantime, now.....(Pause) T+8 minutes and ten seconds. T+8 minutes and 42 seconds. Spacecraft is now passing over the tracking range of the Bermuda station.

Nine minutes and 25 seconds into the flight. We have a preliminary estimate on that orbit now. 86 nautical miles perigee by 150 nautical miles apogee. These figures will be refined as we pass over the tracking station at Canary Islands. We will now play back the tape voice communication between the

flight crew and the ground controllers during the launch phase.

7 6 5 4 3 2 1 Ignition. Liftoff!

S/C We're all the way. Roger, started.

Roll program initiated.

HOU Roger, roll.

S/C Roll complete.

HOU Roll complete.

S/C Pitch program initiate.

HOU Roger on the pitch.

Mark 50 seconds.

S/C Roger, Mode II away here. Cabin cell is 6.0.

HOU Roger on the cabin.

S/C garbled.

HOU We didn't copy that, Tom.

S/Csun right in my face(garbled)

HOU Still couldn't copy it, Tom.

S/C Roger. We got the sun in our eyes. Keep
us closely advised, Neil.

HOU Oh, okay. I got you now. You're in Mode II now.

Advise no DCS updates now.

S/C Roger, understand. No DCS updates.

HOU You're go for staging, Gemini 9.

S/C Roger, understand staging. We are go.

HOU Roger.

S/C And we have a beautiful fireball staging.

HOU Roger.

S/C Guidance Initiate, Neil.

HOU Roger, Guidance.

S/C The story looks real good.

HOU Roger.

S/C That's fantastic!

HOU Gemini 9, you're go on the ground.

S/C Roger.....go ahead.

HOU And advise you can expect some large out-of-plane on the IVAR which you won't burn.

S/C Roger.

HOU And you may have a little bit of out-of-plane steering building up at the end there.

S/C Okay. Looking for it, Neil. Roger, we've had a(garble).....and yaw start to build up to one degree, Neil.

HOU Roger.

S/C garbled.

HOU Mark, point 8.

S/C Roger..... SECO.

HOU Roger, SECO.

S/C IVI's read 60 forward.

HOU Roger, 60 forward. You're go for IVAR

S/C Go.read back....I'm reading 17 forward, 26 both for 153 down.

HOU Roger.

S/C(garbled).....SECO.....251714. Addressis +0021.

HOU Roger. Say again Address 72. That's 25714?

That was the taped voice communication between Gemini 9 crew and the launch team at the Cape. And we have a note here from our surgeon, Dr. Owen Coons, on the heart rates of the pilots during the launch phase. Pre-launch, our command pilot Stafford's heart rate was 90. At liftoff, 100. During the launch phase peak, 140. Pilot Cernan: Pre-launch heart rate was 95; liftoff, 105; and during the peak launch phase, 120. This is Gemini Control. 18 minutes, 16 seconds into the Mission.

END OF TAPE

This is Gemini Control, we are 26 minutes and 25 seconds into our mission. At this time, the spacecraft and its target are passing over the tracking range of our Kano, Nigeria tracking station. The spacecraft is in an orbit of 86 nautical miles by 144 nautical miles. This is additional information on the orbit that was picked up at the Bermuda tracking site, from the Bermuda tracking data and this will be farther refined as we get the Canary Island data reduced. I would like now to take you back to the final moments of the countdown when we reported a switchover on our guidance here at Mission Control. What actually happened during the final minutes of the countdown, there was an attempt to put an update into the launch vehicle at T-3, this update did not go into the launch vehicle program, therefore, the switchover flashed here however, it had been decided if we did not get that countdown -- or that update in, we would go with the update that we put in at T-15 and so we did launch and everything was normal since we launched on the time that was programmed -- 8:39:33 and we launched on the second. So, the T-15 data was perfectly good. This is Gemini Control, 27 minutes and 56 seconds into the mission.

END OF TAPE

This is Gemini Control 29 minutes 45 seconds into the mission. The spacecraft is passing now over the African continent. We have just had loss of signal from Kano, Nigeria and at this time we will play back the voice tapes taken, - (interruption) Canary Islands and Kano.

CYI Gemini 9, you are one Alpha time. 15 plus 55.
S/C Gemini 9. Roger, 15 plus 55 one Alpha.
CYI Roger.
AFD Cap Com, AFD
CAP COM AFD go ahead
AFD Just want to confirm your liftoff time is
13:39:33
CAP COM Roger.
S/C Houston, Gemini 9, the primary scanners look good.
HOU FLIGHT Roger, understand, you insertion thermer is 86 by
150.
S/C Roger. Copied 86 by 150
HOU FLT That is affirm.
S/C Fuel quantity is 95 percent.
HOU FLT And you liftoff time was on time. Three nine plus
33.
S/C Roger, copied 13:39:33 liftoff.
HOU FLT That is right.
CYI We are 40 seconds to LOS.
HOU FLT Canary Cap Com, Houston Flight.
CYI Go ahead Flight.

HOU FLT Roger. We have passed the crew their liftoff time and also their thermers. The only major thing we have got over your site is a com check get this right at acquisition, get the status on their insertion check and we will try and get you the phasing maneuver out there. If we don't, we will voice remote through you.

CYI Roger.

HOU FLT Canary says ATDAM solid.

Roger.

HOU FLT Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU FLT Roger, I have the 2-1 data if you are ready to copy.

CYI Go ahead.

HOU FLT 2-1 GETRC 01 26 31, RET 400K 07 plus 59 RETRV 14 plus 37 roll left 85 roll right 95. Read back please.

CYI GETRC 01 26 31, RET 400K 07 plus 59, RETRV 14 plus 37 roll left 85, roll right 95.

HOU FLT Okay, give that to the crew and get the contex.

CYI Roger.

HOU FLT Canary Cap Com, Houston Flight.

CYI Go ahead Flight.

HOU FLT Have you got acquisition yet?

CYI We have ac contact.

HOU FLT Okay, I will give you the phase adjust maneuver.
Are you ready to copy?

CYI Roger.

HOU FLT GETB 49 plus 05, Delta V 73.6, Burn time 1 plus
39, yaw 0, pitch 0, address 25 00 736, 26 and
27 all z(garbled), thrusters aft, maneuver posi-
grade. This is the phase adjust maneuver.

CYI Roger, Flight. I have it.

HOU FLT Read back.

CYI GETB 49 plus 05, Delta V 73.6, Burn time 1 plus
39, yaw 0, pitch 0, address 25 00 736, addresses
26 and 27 all z (garbled), thrusters aft, maneuver
posigrade. Phasing adjust.

HOU FLT Right.

CYI We have Gemini TM solid all signals are go, Flight.

HOU FLT Roger.

CYI Gemini 9, Canary Cap Com.

S/C Hello Canary. How are you?

CYI Roger, I have your phasing adjust maneuver. If
you are ready to copy?

S/C (garbled)

CYI Roger, GETB 49 plus 05, Delta V 73.6, burn time 1
plus 39, yaw 0, pitch 0, address 25 00 736, address

CYI 26 all z(garbled), address 27 all z(garbled),
thrusters aft, maneuver posigrade. Your phasing
adjust. Do you copy?

S/C Canary, say again all through yaw zero, pitch
zero, please.

CYI Roger. Address 25 00736, address 26 and 27 all
zeros, thrusters aft, maneuver posigrade, phasing
adjust.

S/C Canary, Gemini 9. Roger, I would like GETB,
Delta V and Delta T, please.

CYI Roger, GETB 49 plus 05, Delta V 73.6, Delta T
1 plus 39.

S/C This is Gemini 9 Roger. Phasing maneuver 49 plus
05, Delta V 73.6, Duration is 1 plus 39, yaw 0
pitch 0, 25 is 00036, 26 is zero and 27 all
zeros aft thrusters posigrade.

CYI Roger 9. That is correct.

S/C Any further check with Houston, please?

CYI Roger, thank you.
I have your 2-1 update.

S/C (garbled)

CYI Say again, Gemini 9.

S/C Stand by. We will copy in a minute.

CYI Roger.

GEMINI 9A MISSION COMMENTARY, 6/3/66, 8:09 AM TAPE 32 PAGE 5

CYI Flight, we have lost our 12 18. We will be back when we can.

HOU FLT Roger. We read you.

S/C Canary, Gemini 9. Go if you want.

CYI Roger. GETRC 01 26 31, RET 400K, 07 plus 59 RETRV 14 plus 37 roll left 85, roll right 95.

S/C Gemini 9, Roger. 2-1 GETRC is 01 26 31, 400K 07 plus 59, the first bank at 14 plus 37, left 85 degrees, right 95.

CYI Roger, Gemini 9. Stand by for UHF check when you are ready.

S/C Roger, switching over to UHF. We will give you a call in 30 seconds.

CYI Roger.

S/C Canary, this is Gemini 9 on UHF. Do you read me?

CYI Roger. Read you loud and clear Gemini. Let's go back to No. 1.

S/C Roger.

CYI Flight, we have good C-band track.

HOU Say again Canary.

CYI We have good C-band tracking, still looking good.

HOU Roger.

CYI We have target TM LOS.

HOU Roger.

CYI He still looks good, Flight.

HOU Roger, Canary.

Roger, Canary.

CYI He looks like he is making is horizon sensor check.

He is on his secondary now.

HOU Roger.

CYI We have Gemini LOS, Flight. All systems are go.

HOU Roger, good flight.

CYI Roger, Flight.

Flight, Canary. We will get a tape playback and get you a summary as quickly as we can.

HOU Roger, thank you.

Canary, could we get a Bravo summary from you?

CYI Roger, Flight.

HOU Tana go remote UHF

Roger, wilco

HOU Gemini 9, this is Houston

S/C Roger, Houston

HOUSTON Roger, we would like to give you GET time hack.

That will be 25 15 and 3 seconds. Mark

S/C Roger, we are right on, water boiling and still

....

HOU Okay. And we are holding you 86 by 144 at Bermuda.

I would like to give you a new maneuver.

S/C Roger.

HOU Roger, we have an apogee of 147 now out of Canary

HOU so we will give you the maneuver changes based on that of Canary's.

Okay, are you ready to copy.

S/C Stand by.

HOU Okay, GETB is 4903, Delta V 75.0, Burntime 1 plus 40, address 25 is 00 750, all the rest are the same.

S/C Okay, we got GETB 49 plus 03, Delta V 75.0, 25 zeros, 26 zeros, 27 zeros, aft thrusters, posigrade.

HOU That is correct.

Houston is about one minutes until LOS

That was taped voice communications between Gemini 9 and our tracking stations at Canary Island and Kano, Nigeria. The spacecraft is now passing - has passed off the coast of Africa and has moved out in the Indian Ocean. Meantime, the crew has been given the update for their first maneuver. This is the phasing maneuver. The burn will take place at a ground elapsed time of 49 minutes and three seconds. The Delta V of the burn will be 75 feet per second. The Delta time for burn will be one minutes and 40 seconds. At this time, our spacecraft is approximately 15 miles below its target and the range between the spacecraft and the target is approximately 425 miles. This is Gemini Control at 40 minutes 38 seconds into the flight and at this time we have a tape voice communication between Gemini 9

and Tananarive tracking station. We will play that now.

HOU FLT Tananarive, Houston, go remote UHF.

TAN Tananarive remote.

S/C (Garbled)

HOU Gemini 9, Houston.

S/C This is Gemini 9, read you loud and clear.

HOU Roger, Tom, we have a pointing star for you.

It is Theta Aquilla. That is 7 degrees down
and one degree right.

S/C (Garbled)

HOU It is Theta Aquilla. It is on your SE-1
chart and it is close to Altair.

S/C Roger.

HOU And and Gemini 9, would you check your tape re-
corder power circuit breaker, please?

S/C (Garbled)

HOU We are reading you a little bit garbled, Tom.

That was, check you tape recorder power circuit
breaker.

S/C ...(Garbled)

HOU Houston is one minutes from LOS.

TAN Tananarive has LOS.

That was taped voice communications between the Tananarive track-
ing station, at least the Mission Control here remoting it through
Tananarive and Gemini 9 crew. This is Gemini Control 42 minutes,
45 seconds into the flight.

END OF TAPE

This is Gemini Control, 1 hour and 29 seconds into the mission. Spacecraft is now passing over Australia on its first revolution. It is trailing the target at approximately 400 nautical miles. Carnarvon gave Tom Stafford a GO for 16 orbits during the pass over the tracking station. By this time Tom Stafford should have completed his phasing maneuver which was due to begin at a ground elapsed time of 49 minutes and 3 seconds. At this time we will play back the voice tape between the Carnarvon Tracking Station and Gemini IX.

HOU Carnarvon Cap Com, Houston Flight.

CRO Flight, Carnarvon, go ahead.

HOU Roger. I assume here at this discussion we didn't see any indications of tape motion on MA-95. Check it when it comes over your sight and let me know.

CRO Roger, will do.

HOU Okay, and if you get any sign during the pass and you still don't have any tape motion, we'll be talking to you, letting you know what our thoughts are.

CRO Roger.

HOU OK. We already had them check the tape recorder power circuit breaker on the right hand panel and he said he'd check it. If they'll check that they may 95 in your back room too.

CRO Roger sure will.

HOU Carnarvon, we're standing by.

CRO Roger. Carnarvon has ATDA telemetry solid.

HOU Roger.

CRO Telemetry go. Carnarvon has acquired contact.

HOU Roger Carnarvon.

CRO We have telemetry solid and the spacecraft is fine.

HOU Roger. Roger.

Radiator look good?

CRO It's just within limits.

HOU Okay.

CRO We have C-band track.

HOU Roger.

Look like you have tape motion, Bill.

CRO The front room indicates it saw, I'm going to check with the back room.

HOU OK. You might have a patching problem there.

CRO Roger.

S/C Hello Carnarvon, Gemini 9.

CRO Go ahead Gemini 9.

S/C Roger, completed our burn right on time. The residuals were zero four (garble) zero. We're standing by for accelerometer bias check. We'll give you a call as soon as we have all addresses.

CRO Roger, would you give us that residual again please?

S/C Roger, address 80 was plus one tenth, 81 was plus two tenths, 82 - zero.

CRO Roger. We'll give you a GO on the radiator you can place the evaporator switch/^{to}normal.

S/C Roger. We've loaded all (garbled) towards 25, 6, and 7. Fixing to start counting.

CRO Standby one Gemini 9.

CRO Flight, Carnarvon

HOU Go Carnarvon.

CRO We're holding off on this just a second here, I've got telemetry problems.

HOU Okay. We'll have to tell the crew you've got ground telemetry problems. They'll have to standby.

S/C Gemini 9, Carnarvon.

CRO Carnarvon, niner GO.

S/C Heard you were having some telemetry problems. I'll give you a call as soon as we're set up here.

CRO Okay.

S/C Gemini 9, Carnarvon.

CRO Carnarvon, niner GO.

S/C Roger, will you cycle back to prelaunch and then back to catch up please.

CRO Roger, how about going to rendezvous.

S/C Okay. Roger we'll start the accelerometer bias check.

CRO Roger, start count with (garble).

S/C ANBL thats 16-12.

CRO Roger, your go for 16 one.

CRO Flight, Carnarvon.

HOU Go Carnarvon.

CRO Okay MA 95 the back room advises me that

HOU Roger, MA 95 is 77 percent.

CRO Thats affirm.

HOU Okay, we're going to check this out and see if we've got a patching problem here.

CRO Roger, did you copy those residuals on the burn.

HOU Affirmative.

CRO Roger.

CRO Gemini 9, Carnarvon. Would you place the quantity read switch to ECSO2?

S/C Coming to ECSO2.

HOU Thats CLSO2.

S/C Roger, CLSO2.

HOU Get some time Bill. Let's get a oams quantity.

CRO Okay. Onboard?

HOU Yes.

CRO Give us LH2.

S/C H2

CRO The quantity reads off.

S/C Roger its off.

CRO Would you give us an OAMS quantity readout?

S/C The OAMS quantity reads 82 percent.

CRO Roger.

HOU How are you doing in the accelerometer bias Bill?

CRO Real fine, just about finished.

HOU Okay, we're getting your messages.

CRO Flight, Carnarvon.

HOU Go, Carnarvon.

CRO Okay, we've completed the accelerometer bias summaries.

HOU OK.

CRO Gemini 9 Carnarvon, we've completed the accelerometer summaries.

S/C Fine, roger.

CRO Flight, Carnarvon.

HOU Go, Carnarvon.

CRO Do you want an LOS made on Gemini?

HOU Go ahead, yes.

CRO Flight, Carnarvon.

HOU Go ahead.

CRO Okay, we've had LOS on both vehicles. The only problem that I saw during the pass is on the spacecraft tape (garble), we've got a problem with it. You might have Hawaii check it.

HOU Right.

CRO Or the next state side pass.

HOU Okay spacecraft yaw.

CRO Thats affirm.

HOU Greater than 300 hours, right.

CRO Thats affirmative.

That was tape voice communication between Gemini 9 and the Carnarvon Tracking Station. You may have heard during that communication that the Carnarvon Station was having some telemetry problems with its ground equipment and had to switch to some backup equipment. Gemini 9 is now passing over the Pacific Ocean on its first revolution. The target has now been in orbit for more than 47 hours. This is Gemini Control, 1 hour, 7 minutes, 9 seconds into the flight.

END OF TAPE.

MISSION COMMENTARY, 6/3/66, 8:50 a.m.

Tape 34, Page 1

This is Gemini Control, one hour, 10 minutes, and 30 seconds into our mission. The spacecraft is now passing over the Pacific Ocean within range of the Canton Island Tracking Station. We have an update on our orbit values, as a result of the phasing burn made by the crew as they passed over the Carnarvon Tracking Station. Our new orbit is 147 nautical miles apogee by 125 nautical perigee. This is Gemini Control, 11 minutes now into the flight.

END OF TAPE

This is Gemini Control, we are 1 hour and 55 minutes and 20 seconds into our mission. The spacecraft and the target vehicle are now moving towards the coast of Africa. The west coast of Africa and within range of our Kano Tracking Station. We have some word from our Flight Surgeon, Dr. Owen Coons. He said the biomedical data on the crew is very good. We have some additional information on the next event which will occur. The corrective combination maneuver which will occur at a ground elapse time of 1 hour, 55 minutes and 17 seconds. This burn will be with the aft thrusters. Tom Stafford burning the aft thrusters to increase this velocity by 14.6 feet per second. Fourteen point six feet per second. The burn time will be 19 seconds, he will yaw 67 degrees left and pitch up 40 degrees. This burn will be followed with a second burn designated the NSR burn or coelliptical burn, designed to make the spacecraft orbit coelliptical. This will take place at a ground elapse time of 2 hours, 24 minutes and 51 seconds. Again the aft thrusters will be used. The burning will be at a rate of 54 feet per second and the burn time will be 1 minute and 11 seconds. The yaw will be three degrees left and pitch 41 degrees down. The corrective combination maneuver is designed to correct small discrepancies in the phasing, height and out-of-plane position of the spacecraft. The coelliptical burn of course is to make the orbit coelliptic. We have additional information, aboard the spacecraft, the jack outlet or plug similar to a plug that would be found in the ordinary home, this plug on the left side or at Cernan's* seat is presently inoperative. Stafford plans *Commentator meant Stafford's seat. to work on it after rendezvous. This particular plug powers the camera or reticle and other items they may plug into it. If it

stays inoperative however, we will use the plug on Cernan's side which is operating. The spacecraft is in an orbit of 125 nautical miles by 150 nautical miles. The target 161 nautical miles circular. The TCM recorder on the spacecraft which was reported not in working order, is now in working order. At this time we would like to play back some of the taped voice communications as the spacecraft passed over the Hawaii tracking station, the state side tracking and Bermuda. If we get time the Ascension tracking station.

HOU Gemini 9, Houston standing by.

S/C Roger Houston.

HOU Gemini 9 Houston. Can you tell us whether you saw any drift on your IVI's during your accelerometer bias check.

S/C Roger. It just came out. Fighter, we saw the up mode to your one before we finally up to your one very small.

HOU Roger. Up went to one and left right went to one, is that right.

S/C Roger.

HOU Okay.

S/C (garbled)

HOU Standby, I don't think its required.

S/C Roger.

HOU We will update your accelerometer bias, over the states.

S/C Houston, say again.

HOU We will update your accelerometer bias over the states.

S/C Roger.

HOU Hawaii Cap Com, Houston Flight

HAW Flight, Hawaii.

HOU Roger. Jerry, you have the MI at 14:41, you've got the flight plan update, you've got the time of the 250 nautical mile range and your going to get the L-band beacon on, right.

HAW Roger.

HOU Okay.

HAW We have solid TM on the ATDA.

HOU Roger. You might check the clock too Jerry.
TR clock.

HAW We haven't got the spacecraft yet.

HOU Roger, I know.

HAW Yea, we're straight up for that.

HAW Transmitting L-band on. Transmitting at the primary execute. Execute reset. We have L-band on.

HOU Hawaii Cap Com, Houston Flight.

HAW Flight, Hawaii.

HOU Roger. You can advise the crew that you've just turned the ATDA L-band on.

HAW Roger. And their clocked to be over me in one second.

HOU Okay, thats your TL clock.

HAW Roger. Spacecraft looking good flight.

HOU Roger.

HAW Gemini 9, Hawaii.

S/C Hawaii, Gemini 9.

HAW Roger. You look real good here on the ground.

HAW We have a 250 nautical mile range update for you.

S/C Roger, standby.

Well go ahead Hawaii.

HAW Roger. GET - 01:40:00

S/C Roger, 01:40:00.

HAW We also have a flight plan update for you.

S/C Roger. Go ahead.

HAW Node 01 13 39, rev 1-172.6 degrees west, right
ascension 20 09.

S/C Roger. Node 01 13 39, rev 1 172.6 degrees west,
right ascension 20 09.

HAW Roger, and we have turned the L-band on the ATDA
and it looks good.

S/C Real fine.

HOU Hawaii we'd like an LOS on the ATDA.

HAW Roger.

HOU Hawaii are you tracking C-bands.

HAW Roger we have C-band.

HOU Okay.

HAW The beacon looks good.

HOU We also need your computer summaries Hawaii.

HAW Roger, its on its way.

HAW Gemini 9 Hawaii, we're LOS minus one and all systems
look good.

S/C Gemini 9, Roger.

HAW Hawaii has LOS on both birds.

HOU Roger Hawaii.

California go remote

CAL California remote.

HOU Gemini 9 Houston

S/C Houston, niner go.

HOU Roger your 180 nautical miles, time is one plus 56.

S/C Roger one plus 56.

HOU An hundred nautical miles will be 2 plus 39.

S/C Roger.

HOU Okay, this current maneuver plan that we're working on Tom has got a Delta H as 12 nautical miles and a TPI 4 minutes before sun sets.

S/C Roger Delta H 12 miles, TPI 4 minutes before sun sets. Sounds real good.

HOU Roger. There'll be no stars for either burn.

S/C Say again.

HOU You won't have any stars for either burn. Ones in daylight and ones pointed down.

S/C Well now you've got to figure thats real hard to see stars.

HOU Roger.

Guaymas remote, California local

GYM Guaymas remote.

S/C Guaymas Gemini 9.

HOU Houston's on.

S/C Roger Neil. My left auxillary recepticle evidently the total unit over there is inoperative so we'll make a little break shift here and using some boards stretched across the cockpit to the reticle from the

S/C right auxillaries.

HOU Roger, understand. I guess both sides are on that same breaker.

S/C Right. This doesn't lead to the connector, the connector is loose on the receptacle but we got it.

HOU I'm with you.

S/C Squared away.

HOU Okay. Do you want to go to prelaunch now Tom for accelerometer bias change.

S/C Going to prelaunch.

Prelaunch.

HOU Okay.

Texas remote, Guaymas local.

GYM Guaymas local.

HOU Okay your bias is being changed now nine.

S/C Roger.

S/C (garbled)

HOU We didn't read you that time. Understand you did get a light.

S/C (garbled)

How do you read me on your(garbled)

HOU We're reading you loud with a little bit of garble Tom.

S/C Roger.

HOU Can you change - that receptacle cord from one side to the other for later in the flight.

S/C Its the receptacle itself Neil. We're going to still make this after we complete the rendezvous and check it out.

HOU Okay.

I advise your bias looks good now Gemini 9.

S/C Roger.

HOU Gemini 9, Houston, got your maneuver message when your ready to copy.

S/C Gemini 9, go.

HOU Okay, GETB 1 55 17, delta V 14.6, burn time 19 seconds, yaw 67, 67 degrees left, pitch 44 up, 44 up, address 25 000 41, address 26 90 10 2, address 27 000 97, aft thrusters, posigrade up north. Thats corrective combination. Go ahead.

S/C Roger Houston, Gemini 9. MCC at GETB 01 55 17, delta V 14.6, duration 19 seconds, yaw 67 degrees left, 44 degrees up, address 25 is 000 41, 26 is 90 10 2, 27 is 000 97, aft thrusters, up and north.

HOU Thats correct and posigrade and standby for NSR as soon as we get it.

S/C Roger we'll be stand.

ANT AOS Antigua.

HOU Okay standby for NSR.

S/C Go ahead Houston.

HOU Okay GETB 2 plus 24 plus 51, delta V 54.0, burn time 1 plus 11, yaw 3 left, pitch 41 down, address 25 00 40 9, address 26 00 35 2, address 27 00 02 0, aft thrusters, posigrade down north, thats NSR go ahead.

END OF TAPE.

S/C

Roger, NSR is 022451. Delta P 54.0, Duration is 1.4 11, yaw is three lift, pitch is 41 down, 25 00 409, 26 00 352, 27 00 020, aft thrusters posigrade down and north.

HOUSTON CAP COM

That's correct, you're on your own now.

S/C

Roger, we're all set to go now.

HOUSTON CAP COM

Okay. 9, give you a GET time hack at 1 43 10 mark, 1 43 10.

S/C

Roger, we're right on, Houston.

~~GRAND~~ TURK

LOS Grand Turk.

HOU CAP COM

Gemini 9, we're about half a minute from LOS, you still have a very small bias in the accelerometer. Looks like for a worse case, PPI will be off about a couple of a tenths of a foot per second. You might have a look at it.

S/C

Roger, Houston, sure will.

ANTIQUA

Antiqua LOS.

HOU CAP COM

Gemini 9, Houston standing by.

S/C

Roger, just completed residuals.

Gemini 9 has acq time, all residuals are 81 and 82.

HOU CAP COM

Very good.

S/C

Gemini 9,is 81%.

HOU CAP COM

Very good. Roger 81%.

HOU

Houston is one minute from LOS.

MISSION COMMENTARY, 6/3/66, 9:35 a.m.

Tape 36, Page 2

This is Gemini Control in Houston, we are now 2 hours, 12 minutes and 15 seconds into our mission. The spacecraft and the target are now passing over the tracking range of our Tananarive station. Our next event will be the NSR or co-elliptic burn which is designed to put the spacecraft into a 147 nautical mile circular orbit. This will occur at a ground elapsed time of 2 hours, 24 minutes, and 51 seconds. Something like 12 minutes from now. After completion of this burn, four minutes later, the spacecraft range from the target will be 109 miles and it will be closing at 126 feet per second. This is Gemini Control, ~~two~~ hours, 13 minutes and 5 seconds into the mission.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/3/66, 10:04 AM TAPE 37 PAGE 1

This is Gemini Control two hours and 24 minutes and 17 seconds into our mission. In just a few seconds at 24 minutes, two hours 24 minutes and 51 seconds, Tom Stafford will start his co-elliptic burn. The co-elliptic burn will place the spacecraft into a circular orbit. The range at that time will be approximately 109 miles and he will be closing at about 126 feet per second. The Carnarvon station over which the spacecraft and the target are now passing has reported radar lock on. They have telemetry and radar and the burn has started. At this time we will play back the voice tape taken between the spacecraft and the Houston Mission Control Center remoting through the Tananarive station.

HOU Tananarive remote through UHF.

TAN Tananarive remote on UHF.

S/C This is Gemini 9....go.

HOU Gemini 9, Houston.

S/C (Garbled)

HOU Gemini 9, Houston. Gemini 9, Houston.

S/C Roger, Houston, Gemini 9. Go ahead.

HOU Roger, read you now. Give you a time hack here.

It will be two hours 10 minutes and 20 seconds,
Mark.

S/C Roger. We are right on.

HOU Okay, then four minutes after NSR your pointing
will be 5.5 degrees above horizontal, azimuth 0,

HOU and your range 109 miles with range rate of 126 feet per second.

S/C Roger, understand. 109 miles and 126 feet per second.

HOU Roger, 5.5 degrees above horizontal.

S/C Just turned the cutoff, say again.

HOU Roger, that elevation was 5.5 degrees.

S/C Roger, 5.5.

HOU Roger.

S/C Houston, Gemini 9, are you trying to call?

HOU No, we weren't, Tom. Advise you are about 150 nautical miles. Have you had any radar acquisition blinking yet?

S/C Not yet. But we will give you a call when we do.

HOU Roger.

S/C Houston, Gemini 9.

HOU This is Houston, go ahead.

S/C Roger. ...radar lock on.

HOU Roger, can you read out that range please?

S/C We are 129.4 miles and we will get you a range rate shortly.

HOU Roger.

S/C I have lost radar lock. Just lost it.

HOU Roger, understand, you have lost it.

S/C Stand by.

Houston, Gemini 9, we get your range rate at 201 feet per second. I don't know how good that is.

HOU Roger, 201.

S/C Houston, Gemini 9, we are at 127 and a half miles range rate 190.

HOU Houston roger.

S/C Houston, Gemini 9. Estimate some ... elevation 6 and a half degrees.

HOU Houston, roger. And we are about one minute from LOS.

S/C Roger and the radar keeps breaking lock just as predicted.

HOU Understand.

TAN Tananarive has LOS.

This is Gemini Control at two hours 28 minutes and 30 seconds into the mission and we have just played back the voice tape between the Mission Control remote voice through Tananarive and the spacecraft. At this time the spacecraft and the target are passing over the tracking range of the Carnarvon, Australian station and we understand they have reported from Carnarvon that Tom Stafford has completed his co-elliptic burn. We will have the new orbit values as soon as they are plotted. Meantime at this time we will play back the voice communications between Carnarvon and the spacecraft.

CRO Carnarvon Cap Com, AFD

AFD AFD Carnarvon

CRO Roger, Bill, you should have received a message all points to transmit a computer summary on the radar lock on. We have radar data for you.

AFD Roger.

CRO Okay, we have had some radar lock on with Tananarive and..

AFD Roger, that is normal Tananarive

CRO Okay, we could get MI, but we did not include the normal flight plan item. Also like you to give us range and range rates.

AFD Carnarvon Cap Com, AFD

CRO AFD, Carnarvon

AFD Roger, Bill, you should have received a message all sites to transmit a computer summary after radar lock on, at every radar data point.

CRO Roger.

AFD Okay, we have had some radar lock on over Tananarive area. And it breaks and it is just the way we figured it would be.

CRO Roger.

AFD We didn't - we sent you the MI, but we did not include the normal flight plan items.

CRO Okay.

AFD We would like you also to give some range and range rates.

CRO Roger, will do.

AFD Okay, we were going to have you update some other information, but it was done over Tananarive on the elevation range and range rates we have computed.

CRO Yeah, Neil intends to do that. He will pass all that stuff up. He doesn't have anything for us.

AFD He also reminded Bill about continuancy Bravo.

CRO Roger.

Carnarvon we are standing by for your pass.

CRO Roger.

Carnarvon has ATDA telemetry solid.

AFD Roger.

CRO All systems are go.

AFD Roger.

CRO Carnarvon has ac contact.

AFD Roger.

CRO Telemetry solid.

AFD Roger.

CRO All systems are go.

AFD Roger. Give me a mark when he starts the burn.

CRO Say again Flight?

AFD Give me a mark when he starts the burn.

CRO Will do, roger.

CRO Gemini 9, Carnarvon Cap Com.

CRO We are standing by.

S/C Should be burning shortly.

9.50 burn Mark burn.

CRO Mark burn.

S/C We are burning Carnarvon

CRO Roger.

HOU Flight Carnarvon

CRO Carnarvon.

HOU Is the radar still in and out?

CRO Okay, by the way, over Tananarive, we gave him that update on that NSR plus 4 data

HOU Roger, we copied.

CRO Mark end of burn. We have C-Band track, Flight.

HOU Roger. Can you give me any range or range rate readings though?

CRO She is not locked on, Flight, in and out.

S/C Tananarive, this is Gemini 9. The burn is complete. The residuals 0 and 81 is 1 and 82 is 1.

CRO Roger. We are standing by for your fuel cell purge.

S/C Roger, coming up on purge.

HOU Carnarvon, do we have another onboard computer summary?

CRO Roger. They are starting to purge.

HOU Roger.

CRO ...2 section 1.

HOU Roger.

CRO H2 section 2.

HOU Roger.

CRO Not having too much luck with this radar, Flight.

HOU Okay.

CRO O2 section 1.

HOU Okay.

S/C Carnarvon, Gemini 9. Purge hydrogen section one and two got a delta P light and presently purging oxygen in section one.

CRO Roger.

HOU Roger that is normal Carnarvon. That is affirm. Bill, when they finish the purge let's get an onboard OAMS prop quantity.

CRO Roger, will do. I don't think we are going to have any luck getting these quantity readings. We are coming uppretty close to LOS here.

HOU Okay, you have got a couple of minutes. Bill, you have got about two minutes left. You have got plenty of time.

CRO Okay. He has started section O2 section 2

HOU If you get pressed for time, Bill, you can delete the cyro quantities.

CRO Roger. Flight, Carnarvon.

HOU Flight, Carnarvon.

CRO The latest range radar we got was 646. That is from the computer.

HOU Okay.

CRO Also had parameter able dog zero two. It has been on through most of the pass. It is confirmed in the back room.

HOU Okay. Roger, could we have an LOS main on the ATDA, Bill.

CRO Roger.

HOU Okay, we would like an LOS Gemini main too.

CRO Roger.

HOU Give me a call, Bill, 30 seconds Los.

CRO Gemini 9 we are 30 seconds to LOS. (garbled) 20 seconds on the section 202 purge and did not get any lights.

HOU Roger, would it be possible for me to get an OAMS quantity readout before LOS here?

ROGER Reading 73 percent.

HOU Roger.

Carnarvon, we also need a Bravo.

CRO Roger.

Gemini 9 purge is completed everything looks good.

HOU Roger.

CRO Did you copy, Flight?

HOU That is affirmative, Bill.

Okay, we will see you the next time around

Bill.

CRO Roger.

This is Gemini Control. Two hours 36 minutes and 10 seconds into the mission. We have completed the burn, the NSR burn, the co-elliptic burn. We do not have any values on our new orbit. As soon as they are plotted here, we will pass them on to you. The fuel cell purge was completed at this time the spacecraft is trailing the target by between 90 and 100 miles. This is Gemini Control two hours 36 minutes 35 seconds into the flight.

END OF TAPE

This is Gemini Control. Two hours, 40 minutes and 30 seconds into our mission. Gemini 9 and the target are moving now over the Pacific Ocean. Gemini 9 trails the target by approximately 88 miles at this moment. This is Gemini Control. Two hours, 40 minutes, 45 seconds into the mission.

END OF TAPE

This is Gemini Control at two hours, 54 minutes and 15 seconds into the mission. Gemini 9 and its target are now moving over the Hawaii tracking station. Tom Stafford reports he has radar lock on the target but he is having some trouble with the onboard computer when he puts it in the rendezvous mode. We will switch now to pick up that voice communication between Hawaii and Gemini 9.

HOU Carnarvon Cap Com, Houston Procedures.

CRO Go ahead, Procedures.

HOU Okay, we're still standing by your Gemini bravo summary.

CRO Stand by, one. We sent you a bravo.

HOU Okay, we haven't gotten it yet.

CRO We probably filled the pipe up with all those summaries.

HOU Okay, stand by. Hawaii Cap Com, Houston Flight.

HAW Flight, Hawaii.

HOU Harry, do you have the 1608 ...?

HAW Roger, we're going through it now.

HOU Roger, very good.

 Carnarvon Cap Com, Houston Procedures.

HOU Hawaii Cap Com, Houston Flight.

HAW Flight, Hawaii.

HOU Roger, when you go through that sequence and you post back let us know what that ring B activity is off.....during the past.

HAW Roger, will do.

HOU Hawaii Cap Com, Houston Flight.

HAW Flight, Hawaii.

HOU It looks like you've got a normal pass. You've got those commands to send to the ATDA and G & C would like three OBC's, one at acquisition, mid-pass, and LOS.

HAW Roger, will do.

HOU Right. We'd like to have those OBC's cut one and a half radar lock.

HAW Rog.

HOU Okay, we'll keep the chatter down at this end of the loop and listen to you as you configure that ATDA.

HAW Do you want me to acknowledge the sequence, and you'll hear it.

HOU Yes, go through them, Harry.

HAW Roger, will do.

HOU If it doesn't give you too much trouble. If it does, just break off.

HAW Rog. We have initial contact of both vehicles.

HOU Roger.

HAW And solid C-Band.

HOU Roger.

HAW ATDA lights reset.

HOU Roger.

HAW Sep command number one. Sep command number two. Squib is armed. Primary executed. Execute reset. Sep one reset. Sep two reset. Squib one disarmed. Acq lights on.

S/C Hello, Hawaii. Gemini 9.

HAW Gemini 9, Hawaii.

S/C Roger. We've had a computer malfunction. We want to clue you in on it.

HAW Roger, go ahead.

S/C Roger. We noticed this after the NSR burn that every time we go from rendezvous back to catchup the comp light would come on without starting and the IVI's would display. Could show we're getting some signal in that would start the computation cycle. Okay, went to rendezvous and after the total data points when we got the first solution displayed, the start comp light came on and it cranked up the solution, what it would be for this range. And we were not given a second data point. We went to catch up mode and had the same values at catch up that we had in rendezvous and that's when the light was on which shows we're holding in the register. It appears that after every eight data points all we're getting is that solution and nothing more. Our Delta Delta R shows we're about two and a half miles high for fifteen which is 12.5. Ourisn't too bad. And the radar is doing beautiful. You want to relay that on to Houston?

HAW Roger, will do. Everything is looking good here on the ground. We're sure that you've got solid

lock.

S/C Roger, we do have solid lock. Occasional break and the needles aren't too wild.

HAW Roger.

HOU Okay, Harry. Have you finished configuring the ATDA?

HAW Roger, we've completed.

HOU Okay, you've maps on all functions.

HAW Roger. How much of that analysis did you copy?

HOU I think we've copied all of it, Harry. We'll probably have some questions over the ~~states~~ here.

HAW Okay. I just wanted to say I can go back and get it off of the tape if I had to.

HOU Well, I think you ought to go ahead and start breaking it down as soon as you finish your pass.

HAW Okay, will do. Houston, Hawaii.

HOU Go ahead, Hawaii.

HAW Our 1218 is....

HOU Roger.

S/C Hawaii, Gemini 9. We're back in rendezvous mode to try to stay close. We're getting good Delta Delta R's out of our computation. We'll let you know when we get our next solution.

HAW Roger, will do. Did Houston say they'll talk to you about the problem over the states?

S/C Roger, it's just the same as if we'd start comp every

time we're in catch up or rendezvous mode.

HAW Roger, understand.

HOU You can tell him we confirm the Delta H, 12.5.

HAW Gemini 9, Hawaii. Houston says they confirm the
Delta H.

S/C Roger.

HOU Harry, you can also advise the crew that we've
configured the ATDA for rendezvous, all the lights
are on.

HAW Roger, understand. Will do. We're not getting,
I mean, we're still getting a switch from the dia-
pole to spiral and we're showing solid lock here on
the ground.

HOU Okay.

HAW Gemini 9, Hawaii.

S/C Go.

HAW The ATDA has been configured for rendezvous and all
the lights are on at this time.

S/C Roger. Real fine. Hawaii, this is Gemini 9.
We're presently 8 degrees and 76 points 67 miles
range rate 126.

HAW Roger, copy.

S/C Hawaii, Gemini 9 is 8.6 degrees 7458 miles 125 range
rate.

HAW We've had LOS both vehicles.

HOU Roger.

END OF TAPE

This is Gemini Control, three hours, two minutes, 43 seconds into the mission. We have just established voice communication with Gemini 9 from the stateside tracking stations and we switch now to pick up that communications.

S/C is..something is initiated the start com cycle. We noticed this just as we finished the NSR burn.

CAP COM Roger, we are with you. Just advise you here you've got less than one mile relative ellipticity so its going to be reasonably easy to predict the proper TPI.

S/C Roger, our Delta Delta R shows we are in pretty good shape too up here.

CAP COM Roger

This is Gemini Control. Three hours, four minutes, 30 seconds into the mission and we are tuned in to pick up the live communication between stateside tracking stations and Gemini 9. We are standing by.

S/C Houston, Gemini 9, we are 9.6 degrees, 6.67 range, range rate 125.

This is Gemini Control. Three hours, eight minutes, 20 seconds into the mission. We are standing by to pick up communications between Gemini 9 and the stateside tracking stations in our Control Center at this moment. The backup crew of Jim Lovell and Buzz Aldrin have appeared along with Deke Slayton, the Director of Flight Crew Operations.

S/C Hello Houston, Gemini 9

CAP COM Go ahead.

S/C Roger. We are still aligning the platform here, Neil.

CAP COM Roger, understand.

S/C Houston, 9. Elevation 10.5 degrees, range 57.55,
range rate 128.

CAP COM Houston, roger.

S/C Houston, Gemini 9. Elevation 11.1, range 55.49.

CAP COM Houston.

S/C Houston, Gemini 9. No elevation, range is 53.44,
range rate 121.

CAP COM Houston, rog.

S/C Houston, this is 9. We are complete with the
platform alignment, we are pitching up near the
target.

CAP COM Nine, Houston has TPI backup when you are ready to
copy.

S/C Roger, ready to copy.

CAP COM Roger, GETB 33535, GTNSR 11044, Delta V 26.8,
burn time 35 seconds, address 2500231, address
26 - 90134, address 27 - 90020, that's 26.7 forward,
1.3 up, 2.2 right. The range - 28.4 nautical miles,
range rate 115, azimuth 0.5 left, elevation 27.4
up.

S/C Roger Houston, GET burn 033535, GTNSR 011044,
Delta V 26.8, Delta P 35 seconds, 2500235, 00231,
2690134, 2700020, 26.7 forward, 1.3 up, 2.2 right,
range 28.4, 115 range rate. Azimuth 0.5 left,
elevation 27.4 up.

CAP COM Houston, roger.

S/C Houston, Gemini 9. Say again GET burn, please.

CAP COM Roger. It's 33535.

S/C That's 033535. Thank you.

Neil, we've had another com cycle, its done exactly the same as the previous cycles. As soon as the first solution was displayed it went to the total vector to rendezvous at that point.

CAP COM That's correct, understand.

CAP COM Gemini 9, Houston.

S/C Houston, go.

CAP COM Roger, Tom. I'm sure you have been looking at this, our estimate for the time to switch into rendezvous mode is at 15.3 degrees or three hours and 20 minutes 05 seconds.

S/C Roger. That's pretty close to what we've come up with. We're going ahead and putting some addresses in the computer and checking them now.

CAP COM Roger. Your darkness time, your TPI is currently five minutes, about five and a half minutes before sunset.

S/C Five and a half before sunset.

CAP COM Did you switch into rendezvous now?

S/C Roger, we are switched into rendezvous.

CAP COM Houston, we are about a minute from LOS. About what time did you switch into rendezvous?

S/C Hello Houston, Gemini 9.

CAP COM Roger.

S/C I've got a real faint light out there by reticle,
its still too early to tell.

CAP COM Good show. Can you tell us what time you went
into rendezvous mode?

S/C I've got it. I've got him in reflected satellite
now as about a six magnitude star.

CAP COM Roger, good.

S/C Houston, Gemini 9. The boresight between the optics
and the radar looks very good.

CAP COM Very good, we are approaching LOS.

S/C Roger.

That was voice communication live between Gemini 9 and the stateside tracking stations, also the Ascension Island tracking station, I mean, pardon, correction here, I mean Bermuda and Antigua. The spacecraft is now approximately 25 to 30 miles trailing the target and you heard Tom Stafford that he thought he saw a real faint light in the direction of the target, that it was too early to tell. This could be the acquisition light of the target vehicle and if so, the target would have the shroud separated. However, it is too early to tell whether that light he did see was the acquisition light or beacon, on the target. This is Gemini Control. We are three hours, 23 minutes and 35 seconds into our mission.

END OF TAPE

This is Gemini Control. Three hours, 35 minutes into the mission. Gemini 9 and its target are passing over the Ascension Island tracking station area. The range between the spacecraft and the target is now between 25 and 30 miles. The terminal phase initiation or forward burn has been initiated. This is Gemini Control. Three hours, 35 minutes, 30 seconds into the mission and at this time we will play back the taped voice communication between the spacecraft communications here at Mission Control remoting through Ascension to Gemini 9.

HOU Gemini 9, Houston standing by. Gemini 9,
Houston standing by.

S/C Garbled.

HOU Roger, okay, Tom, it won't hurt you if you go ahead
and press start comp after you get your solution.

S/C Roger.

HOU We recommend it.

S/C Gemini 9.....(garbled)

HOU Houston could not copy.

S/C Houston, this is Gemini 9. The optical first sight
....is 12 degrees...the radar first sight.

HOU Roger, understand.

S/C Houston, Gemini 9.....reads 22 degrees, 32 miles.

HOU Houston. You're a little bit garbled, Gene.

S/Cgarble....

HOU Houston LOS.

That was taped communication between the Houston Control Center remoting through Ascension and Gemini 9. At this time Gemini 9 and the Target are approaching the African continent, with the range at this time on the order of 20 miles. This is Gemini Control, 3:37 into the flight.

This is Gemini Control Houston. Gemini 9 and the target are now passing over the southern tip of Africa. Gemini 9 is on its third revolution. At this time the range between Gemini 9 and its target is approximately 20 miles. This is Gemini Control, 3 hours, 41 minutes into the mission.

END OF TAPE.

GEMINI 9A MISSION COMMENTARY, 6/3/66, 11:24 AM TAPE 43 PAGE 1

This is Gemini Control. Three hours 44 minutes into the mission. According to our plotted data here, Gemini 9 should be within 17 miles range at this time of the target and we will switch now to pick up the voice communication remoted through the Tananarive station with the Gemini 9 crew.

AFD Carnarvon AFD

CRO Go ahead, AFD.

AFD Turn off that beacon and acquisition.

CRO Roger, will do.

AFD Roger.

This is Gemini Control. We are standing by here for voice communication with the Gemini 9 crew.

This is Gemini Control. Gemini 9 and the target vehicle are passing over the Ascension Island tracking stations at this moment. We are standing by to pick up any voice communications that may occur. Correction. The Tananarive tracking station located off the east coast of South Africa.

S/C Tananarive 54.3 range 9.35 range rate 89 feet per per second.

HOU Roger, we are less than a minute from LOS.

TAN Tananarive has LOS.

That was live voice communication remote through the Tananarive station and Gemini 9 and the last word - probably just about the only word we heard from our crew is that the range at that time was 9.35 miles. This is Gemini Control at three hours 50 minutes 51 minutes into the flight.

END OF TAPE

This is Gemini Control, three hours and about 60 minutes into this mission. We have Gemini 9 passing now into the range of the Carnarvon tracking station and the ATDA or target is three and a half miles in range and we will switch now to pick up voice communication between Carnarvon and Gemini 9.

S/C Have C-Band track.

CRO Roger.

S/C We are at 88.2 degrees and three miles.

CRO Roger.

Did you copy Flight?

HOU Affirmative.

CRO Range rate is 50.

HOU Roger.

S/C Carnarvon, we just applied the second closed loop, so this is up three forward and two down.

CRO Did you copy, Flight?

HOU Affirmative. Get the ATDA beacon off?

CRO That is affirmative.

HOU Okay.

CRO I have got pretty noisy data on the Gemini right now.

HOU Okay.

Are you getting good spacecraft C-Band track?

CRO That is affirmative.

HOU Okay.

S/C Carnarvon, Gemini 9, we have the red running lights at this time, two and a half miles.

CRO Roger.

S/C Carnarvon, Gemini 9. It looks like we are going to be braking directly into the moon. It should be an interesting problem.

CRO Roger.

S/C Gemini 9. Elevation 94.9, range 2.37 miles, 39 feet per second.

CRO Did you copy, Flight?

HOU Affirmative.

Carnarvon, can we have some summaries from you?

CRO Roger, Flight. We are having a problem in the data solenoid and we cannot get our computer locked up.

HOU Okay, Carnarvon, Roger.

CRO ...we will get your summary.

HOU Roger.

S/C Carnarvon, Gemini 9. Elevation 99.0 degrees, two miles 37 feet per second.

CRO Did you copy, Flight?

HOU Affirmative.

CRO Carnarvon has C-Band LOS.

HOU Roger.

S/C Gemini 9. Elevation 102.7 1.67 miles and 34 feet per second and we can actually determine it is

SC tumbling because of the ac lights and the running lights variations.

CRO Roger.

S/C Gemini 9 is 106.8 degrees, 1.32 miles and 34 feet per second.

CRO Gemini 9, Carnarvon, we are 30 seconds to LOS.

S/C Roger, and we (garbled)
This is Gemini 9 on one mile and we can determine the distance between the running lights.

CRO Roger.

S/C Houston, Gemini 9 110.1 degrees, one mile 23 feet per second and we are braking off to 20 feet per second at this time.

That was voice communications between Gemini 9 and Bill Garvan, our spacecraft communicator at Carnarvon. The last range that we received from the crew was one mile in range. This is Gemini Control four hours seven minutes and 52 seconds into the mission.

END OF TAPE

This is Gemini Control, we are 4 hours, 11 minutes into the mission. Gemini 9 and the target are moving over the island of New Guinea at this time. The last word we heard from Gemini 9, Gene Cernan reporting the range to the target as 1 mile. We had no word from the crew on the condition of the shroud. We will have no further voice communication with the crew until Gemini 9 passes over the Hawaiian Tracking Station, which should take place approximately 20 to 25 minutes from now. This is Gemini Control, 4 hours and 11 minutes into the flight.

END OF TAPE.

MISSION COMMENTARY, 6/3/66, 12:00 noon

Tape 46, Page 1

This is Gemini Control at four hours and 20 minutes into the mission. Gemini 9 and the target are now moving over the Pacific Ocean and our next acquisition will be over Hawaii in approximately four minutes. Meantime, our Flight Director Gene Kranz has instructed Gary Scott, the spacecraft communicator at Hawaii to ask the crew of the status of the shroud and to determine the rates on the ATDA. And also, to determine whether they can dock should the shroud be removed. This is Gemini Control, four hours and 20 minutes into the mission. We are standing by for our Hawaii pass.

END OF TAPE

This is Gemini Control in Houston at four hours and 26 minutes into the flight. We have established contact with Gemini 9 over the Hawaiian tracking station. Tom Stafford reports we have a weird looking machine, the clam shells are on -- the shroud clam shells are on but they are open wide and evidently the bolts are blown and we will pick up now that voice communication between Hawaii and Gemini 9.

S/C

Hello Houston, Gemini 9.

HAW

Gemini 9, Hawaii.

S/C

Hawaii, we've got a weird looking machine here.

HAW

What does it look like?

S/C

Okay, both the clam shells of the nose cone are still on but they are open wide. The front release has let go and the back explosive bolts attached to the ATDA have both fired. It appears that one of the bolts of the band has fired. The ones that do fit together is the quick disconnect, a small electrical connector that fires the bolts on the band.

HAW

Roger, understand.

S/C

The jaws are like an alligator jaw that's open at about 25 to 30 degrees and both the piston springs look like are fully extended.

HAW

Roger.

S/C

Also the back parts of the nose cone have separated from the ATDA. It looks like it's just held on by some inconceivable force. But everything looks good.

HAW

Roger, we understand.

HAW What types of rates have you got? How bad is your tumbling?

S/C Okay, its about three or four degrees per second.

HAW Flight, Hawaii

HOU FLIGHT Stand by Hawaii

HAW Rog.

HOU FLIGHT Hawaii Cap Com, Houston Flight.

HAW Go ahead, flight.

HOU FLIGHT Will you ask the crew if they think cycling the target docking adapter.....

S/Cwe have 58% fuel remaining and we're supposed to keep it between 10 and 30 feet.....

HAW Roger copy.

HOU FLIGHT Try back again. Ask the crew if they think cycling the target docking adapter from unrigidized to rigidized might break it loose.

HAW Roger, copy flight.

Roger, say again Gemini 9.

S/C Roger, it appears that the basic rate is in roll.
right now
The body access/is merely horizontal.....

The big rates are in roll.

HAW Roger understand.

Do you think there's any possibility of breaking the cone and shaking it loose by.....

HOU FLIGHT Roger, why don't you have the crew stand by there

HOU FLIGHT

and why don't you try cycling the target docking adapter cone back to the rigidized and then back to the unrigidized and in between each cycle, after recycling back to rigidized have the crew watch it and see if it seems to be doing any good.

HAW

Roger.

HOU FLIGHT

And advise them when you're sending the commands.

HAW

Roger. Gemini 9, Hawaii.

S/C

Hawaii, Gemini 9, I can also see the back two springs -- the(garbled).....30-pound springs, way up in under about 5 or 10 feet -- I'm trying to get into position here.

The back bolt has definitely fired, I can see the spring has got the two cells apart about two inches. / ^{The two halves or} the two inches you can see..... (garbled).....

END OF TAPE.

S/C Rog. It's got smudge marks on it. We're now about three feet from it and the electrical connectors that should disconnect did not disconnect on either one of them.

Capcom: They did not disconnect? Is that right?

S/C The band that's holding the whole mess together -- Stand by one till I give you the distance on this other one -- I'm trying to find the cable disconnect. I can't see the disconnect; of course it would be blocked. Okay, the other one is....the spring is gone from the back of the other aft one and no part is still there. Its separated - the back is completely separated three to four inches and I'll give you another good check. The only thing that is holding the whole mess on there is the bands. Rapid firing would fire those disconnects on one.

HAW Roger understand.

We've got about three minutes here until our LOS. We'd like to go through one rigidized and unrigidized sequence and then you watch it if you'd get into the station where you could watch it from.

S/C Standby one. I don't want to be too close to it we're fixing to cut loose.

HAW Roger, understand.

S/C Okay, now on the other side, both explosive bolts on the band have fired. The band is held intact by all four of those electrical pyros that fire the bolts.

S/C It doesn't look like somebody hooked up a disconnect.....

HAW Roger understand.

S/C Disconnect did not disconnect thats the only thing
thats holding the whole mass intact.

HAW Roger.

S/C Don't want a rigidize yet can we hack it over the
states?

HAW Roger, I was just going to suggest it. I'm getting
to close to LCS.

S/C Yea and I'm to close to the nose cone too.

HAW Roger.

HOU Okay Gary you can advise - well standby we'll pick.....

S/C Relay that word on to Houston, all four explosive
bolts have fired, it is basically free from the ATDA.
Its just barely held on by those four little pyro
wires in them.

HAW Roger.

S/C Pyro wires on the strap is disconnected.

HAW Roger understand.

S/C We have 58 percent OAMS fuel remaining.

HAW Roger.

S/C It looks like an angry alligator out here rotating
around.

HAW I can imagine.

HOU Hawaii Cap Com, Houston Flight.

HAW Go Flight.

HOU Right. Ask the crew if they could be set up for the....

S/C I have another word to Houston, we can station keep here
quite awhile and also we have a suggestion we might put

S/C out our docking bar and go up and tap it.

HAW Roger. Standby.

S/C Roger.

HAW Say again Flight.

HOU I've got a counter proposal. Ask them - tell them we're going to continue working on their description and we'll cycle the adapter and we'll pick them up over the states here.

HAW Okay, very good.

HAW Gemini 9, Hawaii.

S/C Go ahead Hawaii.

HAW Houston wants to wait and take a look at it and try cycling your adapter over the states.

S/C We'll get back in a set position and again pass on to them all four explosive bolts have fired. It is basically free of the docker and are resting on it. We can see its activator and those four little pyro wires which is definitely holding the whole thing.

HAW Okay we're having LOS.

S/C The springs have just about distributed full force.

HAW We've had LOS Flight.

That was voice communication between the Hawaiian tracking station and Gemini 9 and you heard Tom Stafford give a very vivid description of the status of the shroud that is still hanging to our target vehicle. Our next communication of course will come when we get over the state side pass, in a few minutes and we will attempt to bring further information at that time. Hopefully, a plan whereby we can release the shroud. This is Gemini Control at 4 hours, 34 minutes into the flight.

END OF TAPE.

....establish voice communication with Gemini 9 from Houston and we will pick that communication now.

CAP COM You see anything about those?

S/C The (garbled) is too much, Neil, I can't see it.

CAP COM Roger, I understand.

S/C The clamp shells at the back are between four and five inches apart. Coils springs, one of the is beginning to part, the other is still attached. The basic nose cone has detached around the ATDA ring and the only thing holding it together are those yellow wires that go...went to the initiation of the explosive bolts of the straps.

CAP COM I understand. Can you...you cannot tell whether the disconnects have pulled, is that correct? Wire bundle disconnects?

S/C That's affirmative. What's holding it together are the four small plugs that should have put disconnects either on the pyros or the straps. The whole thing is just loosely hanging on there, we're standing by for an unrigidized sequencing, if we would get it right now it would be great.

CAP COM Roger, we'll have to wait until we get over Texas.

S/C Okay.

CAP COM Wait a minute, it will be about six minutes from now when we are over, when we get in Canaveral, uh, acquisition.

S/C Okay. We are standing by to get movies filmed at when you unrigidize.

CAP COM Ok, I've got maneuver message for you for radio Sep when you are ready to copy.

S/C Roger for radio Sep. You want us to stand by here and talk this thing over for a minute and see if we can't possibly...I'd like to look at the idea of possibly extending the docking bar and going up to touching it, the whole thing may fall apart.

CAP COM Ok, we've got about 23 minutes left. The radio Sep, I'd like to give you that first.

S/C Ok. Go ahead, Neil.

CAP COM Ok. GETB is 50100. Delta V 20.0, burn time 35 seconds. Pitch is 90 down, address 250, address 26 90200. 27 zip, forward thrusters up maneuver.

S/C This is Gemini 9. Say Delta V, and address 25,6 and 7 again please.

CAP COM Roger. 25 is all zip's, 26 90200, and 27 zip's, that Delta V is 20 feet per second.

S/C Roger, we got it. GET is 050100, Delta V 20, 35 second burn time, 25 all zero, 26 90200, 27 is zero, and four thrusters up.

CAP COM Roger. It sounds to us like perhaps the cables haven't pulled the disconnects to the wire bundles in which case we would definitely have to wait until... with the contingency plan B there, wait until later to look at that. We will go ahead and exercise that TDA as soon as we get acquisition at the Cape. Your platform alignment prior to this Sep will be

about five minutes from now, so you've got that much time to do what you like.

S/C

OK Neil, from here it looks like its very possible that the wire bundles, that these wire bundles could have separated. It's/^{sure}hard to see, but again, is everybody squared away on what is holding the thing together?

CAP COM

Well, I think everybody down here is pretty well convinced by your description of the situation.

S/C

Yeah, ok. I can't really tell what....we have two big umbilicals that goes to the ATDA, I can't tell whether those are still attached or not but it is the four little wires that go to each of the explosive bolts on the straps that's supposed to have a disconnect on it and those are all intact and all four explosive bolts were fired. So it's just the four disconnect umbilicals on the strap that have not pulled. All four of them are still intact and all four should have pulled.

CAPCOM

Roger. We're with you, Tom.

S/C

Houston. Gemini 9.

Capcom

Houston, go ahead.

S/C

Roger. On the rendezvous, we initiated with 27 forward, one up, ^{which} was not quite closed loop, the computer, then however did function properly to give us our proper correction and appears that

it is working alright and in all modes at the present time.

CAP COM Nine, Houston copied. Can you send the L-Band command, Gene?

CAP COM] Gemini 9, Houston.

S/C Go ahead, Houston.

CAP COM Did you send that L-band command?

S/C We did send an L-band command and the acq lights are off.

CAP COM Roger, understand. And could you tell us the status of your start comp light when you are in catch up now?

S/C Start comp light is working fine, everything appears to be normal. It was just a little anxious to rendezvous I guess. After we once accepted its solution, things went real well.

CAP COM Ok.

S/C We still have about 57% fuel.

CAP COM Roger.

S/C We'll stay here and get in a good position.

CAP COM OK, then how long will it take for you to get in position for platform align as soon as this is over?

S/C Oh, not too long.

CAP COM Ok, we're going to be running out of alignment time here. Your pitch will probably be in in about five minutes or so so we'll have probably a little shorter alignment time, but it'll be ok.

S/C Ok, I'm getting in position now.

CAP COM Rog.

S/C Neil, have you got reading on my suggestion setting the docking bar and giving it a tap?

CAP COM Well we are pretty convinced due to the telemetry signals from the cables that they are still plugged in.

S/C Ok. It looks like it is barely - the cables may still be there, but once that strap goes, the whole thing should deploy.

CAP COM Right. Are you ready to watch for - we are ready to send those commands now.

S/C Okay, stand by.

CAP COM Let us know as soon as you are ready.

S/C Okay, we are right behind it. Send the command.

CAP COM Roger. Okay. Rigidizing now.

S/C It is moving. It is moving all around.
Derigidize the clam shell, the alligator jaw came close lately.

CAP COM Roger.

Acquisition Grand Turk

Okay, unrigidize.

S/C (Garbled) about 15 degrees on it.

HOU Okay, that is pretty good signal then. We will plan on going ahead with the separation burn at this point.

S/C I am in position to ...

HOU Okay, you have about 14 minutes left until separation burn. So guide your platform align in position in accordance.

S/C Roger.

LOS Antigua.

HOU Gemini 9, Houston. We are going to be evaluating the chart situation during the equal period rendezvous. How does it look as far as being able to make that separation time?

S/C We are working .. (garbled)

HOU Okay, let us know.

S/C Houston, Gemini 9. We have finished aligning the platform and moving around in position.

This is Gemini Control four hours 51 minutes into the mission. You have heard the description from Tom Stafford of the status of the target vehicle. At this time the spacecraft and the target are passing over the Antigua tracking station area. The northern part of South America. They are beginning the fourth revolution for the spacecraft. Tom Stafford has aligned his platform and is moving into position for the equal period rendezvous which will deburn for which will start at five zero one elapsed time. Five hours zero one, elapsed time. The burn will be a Delta V of 20 feet per second, Delta time of 35 seconds. He will pitch down 90 degrees

GEMINI 9A MISSION COMMENTARY, 6/3/66, 12:16 PM TAPE 49 PAGE 7

with the blunt end up and fire his forward thrusters. This will put in approximately two and one half miles above the target and they will reach a maximum separation from the target of approximately 11 miles. They will be behind the target approximately 11 miles and will come up again and rendezvous with the target. During this - after the burn is completed, there will be necessary, a slight mid-course correction, which will be figured out by the crew aboard Gemini 9. This is Gemini Control at four hours 53 minutes into the mission.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/3/66, 12:38 PM TAPE 50 PAGE 1

This is Gemini Control at four hours and 58 minutes into the mission. Gemini 9 is beginning its fourth revolution. Our target on its 34th revolution. Both vehicles are passing over the northern part of South America at this time. We have a report that the pressure and temperature readings obtained from the AMU, astronaut maneuvering unit, during the boost phase and while it is in orbit indicate that conditions of the hydrogen peroxide fuel very closely approximate those that pertained on the pad prior to launch. Current readings are pressure 90 pounds psi at temperature 77 degrees. Captain John Donohue, Air Force Project Officer for the AMU experiment, remarked that the unit appears to be in excellent condition. This is Gemini Control at four hours 59 minutes into the flight.

END OF TAPE

This is Gemini Control at five hours and three minutes into our mission. The spacecraft Gemini 9 and out target vehicle are passing over the Rose Knot tracking ship. Within range of that tracking ship Stafford reported he has fuel remaining of 50% and he has completed his equi-period re-rendezvous burn which will place him two and one half miles above the target and the maximum separation between the two vehicles will be 11 miles, the spacecraft being behind. During the contact we had, the visual contact, between Gemini 9 and the target the ring A fuel system aboard the target, the thruster system, was not activated and, therefore, ring A is still available should we arrive at a solution for this shroud which is still hanging on to the target vehicle. While this equi-period re-rendezvous is being made or, as it is being made, the flight controllers here will be evaluating the shroud situation and we hope to come up with some answers. This is Gemini Control, five hours, five minutes into the mission.

END OF TAPE

This is Gemini Control at five hours and 10 minutes into the mission. Gemini 9 and the target vehicle are moving out over the South Atlantic ocean. They have not passed out of voice range of the Rose Knot, our tracking ship located off the east coast of South America. And at this time, we will play back the voice communications taped between Rose Knot and Gemini 9.

RKV Gemini 9. RKV Cap Com. We are standing by for your maneuver in approximately one minutes.

S/C Roger, we are in position.

RKV Roger.

S/C RKV, Gemini 9. Stand by for a mark at ... for a burn.

RKV Roger.

S/C Mark the burn.

RKV Roger. TM read out. We get an indication down here (garbled) TM. End of burn.

RKV Gemini 9, RKV.

S/C Stand by.

HOU RKV, Cap Com Flight.

RKV Go Flight.

HOU Roger. We would like you to send sequence 5 ac lights on to the ATDA please?

RKV Roger.

S/C RKV, make sure we don't have flashing lights on, L-Band on.

RKV Say again.

RKV Gemini 9 RKV. Say again, please.

S/C Make sure the ac lights are commanded on.

RKV Roger, we have just turned them on.

S/C RKV, Gemini 9. Our residuals are zero.

RKV Roger, that is good.

S/c And (garbled)

RKV Roger. And could you give us an evaluation of the range at which you could see the ac lights when you were making initial rendezvous. And also how attractive you thought the ac lights were?

S/C Roger, we saw them for the first time at right after darkness about (garbled) and then we lost it in the second sun light about 30 miles. (garbled) First viewed them in the darkness and then would lose them again.

RKV Okay.

S/C And we saw the reflection of the bird line about five or six miles and then we saw the red running lights that - a good four to five miles.

RKV Roger.

RKV Everything looks good out here.

S/C Roger, RKV.

RKV Report on ac lights and effectiveness?

HOU That is affirmative.

RKV Roger, we recorded the information (garbled)

HOU Okay, have you got anything in your ATDA RF power monitor indicating anything there?

RKV That is affirm

HOU Okay.

RKV Roger, we are reading about 4.2 volts on the meter here.

HOU Roger. Get the ac lights on?

RKV That is affirm, Flight.

HOU Okay.

S/C RKV, Gemini 9, we have the ac lights on (garbled)

RKV Okay, thank you.

S/C The distance is about one mile.

RKV Roger.
Gemini 9, RKV. We have LOS in about five minutes.

S/C Roger, RKV.

RKV RKV has LOS.

END OF TAPE

This is Gemini Control at 5 hours and 20 minutes into the mission. Gemini 9 at this time is passing over the southern point of Africa and very shortly will be over the Tananarive Tracking Station area. We have just established voice communication with Tananarive. At this time Gemini 9 is in its maneuver, the equal period rendezvous maneuver. Tom Stafford and Gene Cernan are busy completing that maneuver. We will bring you information on that as soon as it is received here. This is Gemini Control at 5 hours, 21 minutes into the mission.

END OF TAPE.

This is Gemini Control at five hours and 30 minutes into our mission. Gemini 9 is passing over the Indian Ocean and it is in an equi-period rendezvous attempt. At this time the separation between the spacecraft and the target vehicle should be in the order of approximately five miles with the spacecraft below and behind, trailing the target. We now have a voiced tape which we will play back which was made just a few minutes ago between the tracking station at Tananarive Remote and Gemini Control and Spacecraft 9.

Tananarive go remote.

TAN Has acquisition.

S/C Houston, Gemini 9.

HOU Gemini 9, Houston. Standingby over Tananarive.

S/C Roger, Houston. Gemini 9. We're now about five miles down range from the target and able to distinguish on the ground down below.

HOU Roger, understand. Gene, the Com techs say they were waving and smiling for your pass over.

S/C Okay, that's very good.

HOU Gemini 9, Houston. It's about one minute from LOS

S/C Roger, Gemini 9. Our trajectory looks real nominal on the data plot.

HOU Very good.

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control at five hours, 41 minutes into the mission. Gemini 9 is now passing over Indonesia on its fourth revolution. The spacecraft at this time is above the target and at a range of about eight miles, approximately. We have had no voice communication with the spacecraft since it passed over the Tananarive tracking station. Our next voice communication with Gemini 9 may occur over the Coastal Sentry tracking ship and the one after that would be the Hawaiian tracking station. This is Gemini Control. Our spacecraft is in its equi-period re-rendezvous and the range is about 8 miles, approximately, from the target. Gemini Control at five hours, 42 minutes into the mission.

END OF TAPE

This is Gemini Control at five hours, 50 minutes into the mission. Our flight crew is still in the midst of their equi-period re-rendezvous. The burn looks so good according to Tom Stafford, it looks like there will be no mid-course correction needed. At this time, Gemini 9 is passing over the Coastal Sentry tracking ship and we will bring back for you now - we will play back the voice tape of communication between Coastal Sentry and the flight crew.

CSQ CSQ Cap Com, AFD. CSQ Cap Com, AFD.
HOU CSQ we're standing by for your pass.
CSQ Okay. We show both vehicles are go. Gemini 9,
CSQ Cap Com.
S/C CSQ, Gemini 9.
CSQ Roger, Gemini 9. Would you start your fuel cell
purge at your convenience and advise the next
ground station of your results and it does not
have to occur over a ground station. Do you copy?
S/C Roger, CSQ on the fuel cell purge. We have just
begun to perform horizontal adjust maneuver.
CSQ Roger, understand and we're standing by.
S/C CSQ, Gemini 9.
CSQ Gemini 9, CSQ Cap Com, over.
S/C Roger, we have passed our horizontal adjust maneuver.
We are exactly nominal and our corrections are zero.
CSQ Roger.
HOU Roger.
CSQ Do you copy, Flight?

HOU Say again.

CSQ I say, do you copy, Flight?

HOU Affirmative. CSQ Cap Com, Houston Flight. Can you tell us some summaries, please?

CSQ Say again, Flight.

HOU Send us a main summary, please. We haven't received any yet.

CSQ On the Gemini or ATDA?

HOU That's Gemini, Bill. CSQ, AFD. Have you sent any of your summary data?

CSQ Say again, Flight.

HOU Roger. Have you sent your summaries messages, both on the Gemini and the ATDA?

CSQ That's affirmative.

HOU Okay. I don't read you. I want you to retransmit them.

CSQ I will transmit them again.

HOU Okay.

CSQ CSQ has LOS, Gemini and ATDA.

HOU Roger.

END OF TAPE

This is Gemini Control at six hours and 30 seconds into our mission. The flight crew is still performing the equal period re-rendezvous. Gemini 9 is now passing within range of the Hawaiian Tracking Station. At this time the spacecraft should be passing behind and below the target vehicle. The range should be in the order of 11 nautical miles, which is the maximum separation range during this maneuver. This is Gemini Control at six hours and one minute into the flight.

END OF TAPE

This is Gemini Control at six hours and ten minutes into our mission. Gemini 9 and the target vehicle are now passing over the Pacific. They have just passed beyond range of the Hawaiian Tracking Station. Our crew is still performing the equal period re-rendezvous maneuver. Hawaii reported all systems look good from the ground aboard the Gemini 9. At this time Gemini 9 is below the target and at a range of approximately eight nautical miles. Tom Stafford should begin his terminal phase initiation in about ten minutes. At this time we will play back the voice tape taken between Hawaii and the Gemini 9 crew.

S/C Hello Hawaii, Gemini 9.

HAW Gemini 9, Hawaii.

S/C We're still aligning our platform. We are standing by to roll inverted in approximately 15 minutes.

HAW Roger, we'll be getting a tape dump on this pass.

S/C Say again.

HAW We'll be getting a tape dump on this pass.

S/C Rog. What about the ATDA?

HAW We haven't got any more words on it.

S/C Okay. I still suggest that we try to give it a one sided bumper with our docking barge to see if we can't break it loose.

HAW We heard that.

HOU Houston has your input.

HAW Okay.

We have solid TM on both burns and all systems look good and we're copying the tape dumps.

HOU Roger, Hawaii.

HAW We've completed the tape dump.

HOU FLIGHT Hawaii, Cap Com, Houston Flight, if the crew has got time, we'd like an onboard on the spot quantity.

HAW Roger.

Gemini 9, Hawaii, if you can, I'd like an onboard OAMS spot quantity, please.

S/C Roger, now reading 49%.

HAW Roger.

HOU FLIGHT How's it looking out there Hawaii?

HAW Looks real good flight.

Flight, we're getting a little higher rate on the ATDA, but not too bad.

HOU FLIGHT Okay.

HAW We got a good tape dump.

HOU FLIGHT Roger, Hawaii.

HAW Gemini 9, Hawaii. We have 30 seconds to LOS.

Hawaii has LOS on both vehicles.

That was tape voice communications between Hawaii and Gemini 9 flight crew. The spacecraft is now coming toward the states. And we expect our state side pass shortly. We expect to establish communications shortly. At this time the spacecraft is below target vehicle and should be within a range of approximately six miles. We will stand by now to bring you the voice communication from the state side pass.

HOU Guaymas remote, California local.

GYM Guaymas remote.

This is Gemini Control. We are standing by to pick up voice communications between Gemini 9 and the ground as the spacecraft makes it pass over the states.

HOU Texas remote, Guaymas local.

HOU Texas remote.

HOU CAP COM Gemini 9, if you have time confirm that you've sent the L-band command.

S/C Have we sent the L-band command down?

HOU CAP COM Roger. Confirm.

S/C Roger, we have a solid lock on here. There's been a reflected sunlight ever since we turned over upside starting that, we just completed PPI.

HOU CAP COM Roger, we're with you.

S/C Roger, and everything is looking good.

HOU CAP COM Good.

This is Gemini Control, we are standing by for any voice communications with Gemini 9 as it passes within range of the state side tracking station. Just a few seconds ago, we heard that Tom Stafford had completed his terminal phase initiation.

HOU CAP COM Gemini 9, Houston, I understand that you have turned the ACQ lights off is that correct?

S/C Negative, we have not turned off the ACQ lights.

HOU CAP COM Okay, we're running pretty close on power on this thing so I'd like to have you turn them off when you can.

S/C Rog, we'll turn them off right now Neil.

HOU CAP COM Okay.

S/C They're off flight.

HOU Okay.

S/C Houston, Gemini 9, our pitch angle is now
about 54 degrees.

HOU CAP COM Houston roger.

This is Gemini Control, we are six hours and 22 minutes into the mission. Our Gemini 9 crew has passed out of the range of our state side tracking stations. The flight crew is still in the re-rendezvous -- the equal period re-rendezvous -- and they should be very close to the target vehicle at this time so close that we cannot estimate their distance on our little chart that we have to work with. The spacecraft was coming up from below and within a very few minutes, Command Pilot Tom Stafford will start his terminal phase final approach. This is Gemini Control at six hours and 22 minutes into the mission.

END OF TAPE

This is Gemini Control at six hours, 40 minutes into the flight. Gemini 9 has concluded its equi-period rendezvous and is now station keeping. They have just performed a fuel cell purge. Command Pilot Tom Stafford reports he completed this rendezvous with 42% of his fuel remaining which is within the limits. At seven hours, 14 minutes, 58 seconds elapsed time, the crew will do its separation maneuver for the third rendezvous. This will be a six second burn or a Delta V of 3.7 feet per second. A retrograde maneuver which will put the spacecraft below the target vehicle, therefore, in a faster orbit, and through the night cycle it will get ahead of the target vehicle. We have now a tape of the pass over the Range Knot - the Rose Knot Victor. We'll play that for you now.

S/C Channel 5 and channel 13 have been reset on the ATDA.

RKV Say again channel 5 and channel 13 have been reset?

S/C That's affirmative.

RKV Okay. Gemini 9, RKV Cap Com, standing by until you stabilize and start station keeping.

S/C TM on the Gemini is real spotty and broken.

HOU Okay.

S/C This is Gemini 9.....How do you read?

RKV Gemini 9, this is RKV. Reading you loud and clear.

S/C Okay. We have completed the rendezvous and station keeping about 100 feet from the ATDA and closing in.

RKV Roger.

S/C I have 42% fuel remaining.

RKV Roger, understand. 42%. Roger, I have confirmation for you on your - ready to copy?

S/C We're putting in a fuel cell purge here.

RKV Do you want them to hold that fuel cell purge off, Flight?

S/C We've already started.

HOU Okay, let's go ahead.

S/C Ready now. Go ahead with your update, RKV

RKV Oh, roger. First, I have some information for you. The people at the Cape and Houston do not believe we can get the shroud separated.

S/C Okay.

RKV And so they want to advise you to use minimum OAMS during your station keeping period. If you have on-board reading of 40% we'll have an update for the rest of the flight plan.

S/C Roger, we have it.

RKV Okay, if you're ready to copy I have your sep maneuver.

S/C Stand by here. Okay, go ahead with your message now.

RKV Roger. This is your sep maneuver. GETB 071458. Delta V, 3.7. Burn time 66. Yaw, zero. Pitch, zero. Address 25, 90037. Address 26, all zips. Address 27, all zips. Thrusters forward. Maneuver retrograde. Over.

S/C Roger, understand. Stand by one. This is Gemini 9. I am in the process of inserting O₂ on section 2 at

this time and the sep maneuver is GETB 071458.
Delta V, 3.7. Delta T, six seconds. Yaw, zero.
Pitch, zero. Core 25 is 90037. 26 and 27 are
all zeros. Forward thrusters, retrograde.

RKV That's affirm, roger.

HOU RKV, Flight.

RKV Go ahead, Flight.

HOU You might remind him to start that maneuver when
he's behind the ATDA.

RKV Say again.

HOU Remind him to start that maneuver when he's behind
the ATDA. (said simultaneously with below)

S/C .,the running lights on.....(garbled)

RKV Roger, I wanted to advise you to start that maneuver
behind the ATDA.

S/C Roger, we are in a BEF attitude, now. We will wind
up BEF.

RKV Roger. Copy, Flight?

HOU RKV, Flight.

RKV Go ahead, Flight.

HOU We're concerned about the temperature on the L-Band
radar in the spacecraft. We'd like to turn it off
until we do the separation maneuver and then bring
it up in track again and make sure we separated and
turn it off again.

RKV Roger. That's in the spacecraft?

HOU Say again.

RKV In the spacecraft.

HOU That's correct. Spacecraft L-Band radar.

RKV L-Band radar off?

HOU Goahead, RKV.

RKV Okay, do you want to go to stand by or off?

HOU Stand by a minute for the answer.

RKV Roger.

HOU RKV, tell him to send it off in the blind.

RKV Roger. Gemini 9, RKV. I'd like you to turn your L-Band radar off and turn it on prior to the sep maneuver.

S/C We.....It's getting a little bit warm.

RKV We have about 30 seconds to LOS. We'll be standing by.

S/C Roger. We'll aline that platform B after the retro-grade maneuver.

RKV Roger.

HOU RKV, would you give us a Gemini LOS Bravo?

RKV Roger.

HOU And also a Gemini main.

RKV Roger. Flight, we've had LOS on them.

HOU Okay. Will you get it up to them about the 40% cutoff?

RKV That's affirmative.

END OF TAPE

This is Gemini Control at seven hours into the flight. Gemini 9 is now in range of the Tananarive station. We are about 15 minutes away from the separation maneuver for the third rendezvous. This will take place about three to four minutes before acquisition by the Coastal Sentry Quebec tracking ship and after this maneuver we will power down the ATDA and the spacecraft. We will play back for you now, the pass over the Tananarive station.

HOU Tananarive go remote.

TAN Tananarive remote UHF.

Tananarive has acquisition.

HOU Gemini 9, Houston standing by for your fuel cell purge report.

Gemini 9, Houston. Gemini 9, Houston.

S/C This is Gemini 9.

HOU Roger, How did the purge go?

S/C Say again.

HOU How did your fuel cell purge go?

S/C Real good.

HOU O ay, listen, what is the maximum range you think you were able to see the ac lights at night?

S/C Roger. Right after DCO we saw the ac lights.

HOU Roger, right after TPI.

S/C (garbled)

HOU Understand it faded out. What do you think the maximum range was?

S/C ... mile

GEMINI 9A MISSION COMMENTARY, 6/3/66, 2:40 PM TAPE 60 PAGE 2

HOU Somthing like 25 miles, right?

S/C We would estimate that we saw them about 40 some-
thing miles.

HOU Roger, understand.

How is that alligator?

This is Gemini Control seven hours two minutes. Gemini 9 is
still within range of the Tananarive station. We are standing
by for further conversation.

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control, 7 hours and 10 minutes into the mission. Gemini 9 is over the Indian Ocean out of range of any tracking station. We are about 4 minutes away from the terminal maneuver, - from the separation maneuver at the present time. The communications with the Coastal Sentry Quebec are rather poor right now but we hope they are in better shape when we do have acquisition of the spacecraft at that time, and are able to get a rundown on this maneuver. This is Gemini Control.

END OF TAPE.

HOU CSQ, Houston Flight, do you read?

CSQ Houston Flight, CSQ.

HOU I can barely read you. You are pretty weak. Do you read me all right?

CSQ You are weak, but readable. Have you - what have you got there?

HOU Yes, we have an MI coming to you. We have an MI coming to you. Let me review that briefly with you. One, we would like to know how the SEP maneuver went. Two, we would like to get cryo and TQI readouts. Three, we would like to suggest that the crew use the radar to monitor the separation ... ATDA and then turn it off when they are satisfied. We would propose to turn it on one rev later to again check the separation. Fourth, proceed with powering down. Fifth we have something special in the power down sequence. We would like to stay in pre-launch at least 18 seconds to see if the computer ring light comes on. After that time, go ahead and turn it off, whether it came on or not. Were you able to copy?

CSQ I did not copy too much. I got (garbled)...

HOU Say again, after the cryo and TQI readouts.

CSQ (Cant' hear)

HOU Go ahead with your checklist.

CSQ I have

HOU CSQ, Houston Flight, we have a message, a quick message on the way to you, with the instructions to dispatch.

CSQ Roger, understand.

HOU I can read you now.

CSQ I can read you a little bit better.

HOU CSQ Cap Com, AFD.

CSQ CSQ Cap Com.

HOU Roger, did you receive your MI?

CSQGemini

HOU Roger, have you received your MI?

CSQ (Garbled)

HOU I just copied you then, but I cannot copy what you are doing?

CSQ

HOU CSQ, Flight, did you check the power and control circuit breaker for the tape recorder?

CSQ That is affirmative, Flight.

HOU And it is still on?

CSQ ... circuit breaker (garbled)

S/C (Garbled)

CSQ (Garbled) we would like you to place your ring onand if you are satisfied, turn your radar off until the next rev... power down...

HOU Go ahead Cap Com

CSQ Roger, we still ... circuit breakers...

HOU I understand you to say the tape recorder still indicates off, both circuit breakers have been verified closed.

CSQ That is affirmative. (Garbled)

HOU Roger, switchings and diapoles spiral every six seconds.

CSQ That is affirmative.

HOU Did you get the flight plan update to the crew?

CSQ No, did you want that read up to them?

HOU Affirmative.

CSQ Gemini 9, CSQ Cap Com.

S/C Roger, go ahead.

CSQ I have a flight plan update for you.

S/C Roger, stand by. Go ahead.

CSQ Roger, Hawaii ..073700, crew status report...from 080000 to 090000. At CSQ clime 085400, ELA update fuel cell purge and cryo quantity readout. Sleep period from 090000 to 170000. Did you copy?

S/C Roger. We have this as reported Hawaii 073700, 080000 090000 CSQ will pick up at 085400 fuel update purge, 170000.

CSQ Affirmative. We have nothing further for you Gemini 9.

S/C Roger...

CSQ And we are showing you go as you go by.

S/C Roger.

HOU CSQ, Houston Flight.

CSQ Go ahead Flight, CSQ.

HOU I would like you to ... and send it in to us.
So while we have some time, let me see if I
got it all. He completed the retro burn and
he felt all right about it

CSQ That is affirmative.

HOU He was doing a cryo readout and I could not
read it, I assume you sent all those numbers
to us.

CSQ We will sent them in post...

HOU Roger, what the OAMS prop read.

CSQ 40 percent.

HOU Houston copy.

CSQ Say again Flight?

HOU Disregard.

CSQ He was satisfied with both items four and items
five on the MI.

HOU Let me see what they are. Did he start to power
down?

CSQ Affirmative.

HOU Did he track at all with the radar to satisfy himself
on the SEP?

CSQ Say again Flight.

HOU Did he track the ATDA with the radar to satisfy himself on the SEP?

CSQ Affirmative.

HOU And did you talk to him about bringing it up one rev from now and taking a look again?

CSQ That is affirmative.

HOU Okay, did he take a look at the computer running light and pre-launch before the shut the computer down?

CSQ The computer and radar was already powered down at acquisition.

HOU Okay, that is what I thought I copied. Okay, thank you.

CSQ Roger. We have LOS on both vehicles.

HOU Roger.

AFD CSQ Cap Com, AFD.

CSQ AFD, CSQ Cap Com.

AFD Roger, will you please give us a PFS, on NA95 Metro Alpha 95, tape recorder indicator.

CSQ Roger, stand by. AFD, CSQ Cap Com.

HOU Go.

CSQ We read MA 95 is two percent both scale.

HOU Roger. Thank you CSQ.

CSQ Roger.

AFD Hawaii Cap Com, AFD. Hawaii Cap Com, AFD

HAW AFD, Hawaii.

AFD Roger, did you receive your MI?

HAW Roger.

AFD Did you monitor CSQ's pass.

HAW Roger, most of it. As much as I could.

AFD Okay. You understand we had - found tape recorder indication that it was off. We still want you to try the tape dump anyway.

HAW Roger, will do.

AFD Okay. We did not include MI. It went out
surgeon
From the/on OPM on the water gun.

Stand by.

Your OPN 20 57 Zulu. Get water gun count and report on crew comfort.

HAW Yes, we have that.

HOU Okay. And we have nothing else for you.
Besides your crew status report tape dump.

HAW Roger.

END OF TAPE

This is Gemini Control at eight hours into the mission. The Gemini 9 spacecraft is approaching the West Coast of South America. The crew is eating their evening meal right now. Voice communications between the control center and the Coastal Sentry Quebec were very bad during the pass over that station, we were forced to go to teletype. We did ascertain that Tom Stafford is completely satisfied with his separation burn. He has tracked the ATDA on radar and is satisfied with the separation. He reported 40% OAMS fuel remaining. The Gemini 9's orbit is now 160 by 158 nautical miles, the Augmented Target Docking Adapter is in an orbit 161 by 159 nautical miles. During the night Gemini 9 will gradually pull away from the ATDA and will -- by the time the crew awakens will be approximately 60 miles ahead of it. We will update the crew at that time on the further maneuvers to be done for this rendezvous from above -- where the spacecraft will approach the target vehicle from above. We did have good communications over the Hawaii tracking station and we'll play that tape for you now.

HOU FLIGHT

Hawaii, Flight.

HAW

Flight, Hawaii.

HOU FLIGHT

We tried to find out something over CSQ which we weren't able to do because they had powered down the computers, we were wondering, if first, they waited a while after they were in prelaunch mode before they shut the computer down, and if they waited at least 18 seconds, if they saw the computer running light come on. Do you think you could find that out, please? It would help

in the trouble shooting ans what happened earlier.

HAW Roger, you want me to find out if they hesitated for 18 seconds in the prelaunch mode and if they got the computer run light.

HOU Yes, but I won't say hesitate.

HAW Okay.

HOU FLIGHT Haw, Houston Flight.

HAW Go, Flight.

HOU FLIGHT One more thing, we'd like to have you ask the crew how they feel about the recepticle. They were going to try to fool around with the left one to see if they could get it working again by playing with the connectors when they had time. They were also going to see if they could move the right one over. You might ask them if they've had time to look at that and what their plans are.

HAW Your auxiliary recepticle is that what you are talking about?

HOU FLIGHT That's correct.

HAW Okay.

Flight, Hawaii.

HOU FLIGHT Go ahead Hawaii.

HAW Is it part of his power down check list to turn the OAMS control circuit breaker off?

HOU FLIGHT Stand by.

HOU FLIGHT We're checking, we think it is.

HAW Gemini 9, Hawaii.

S/C Hawaii, 9.

HAW Roger, how is it going? Aw, real good. We're powering down now and we've completed the optical rendezvous real good, right on schedule. And there's no trouble at all breaking optically and it fell in sight like we planned it would. Right now, we've powered down and getting squared away to start the eat period.

HAW Roger, understand.

We expected to see a thermometer in somebody's mouth this time.

S/C We'll give you one.

HAW Okay. Have you got your control power switch open on OAMS?

S/C No, power is closed. Control power is off.

HAW Roger, understand.

S/C If you knew what we were doing you wouldn't have expected ^{to} see a thermometer.

HAW Roger, understand.

Gemini 9, Hawaii.

S/C Go ahead, Hawaii.

HAW During your power down, did you stay in a prelaunch for 18 seconds before you proceeded with the powering down?

S/C

That's affirm. We stayed in prelaunch, put out the light and then powered down about 15 minutes later.

HAW

Okay, you did get the computer run light.

S/C

That's affirm.

HAW

Okay, have you tried switching auxiliary receptacle yet?

S/C

No, we'll trouble shoot that in a little bit here.

HAW

Okay, very good. Okay, we have a good reading on the command pilot on the oral temp.

S/C

Okay, here comes the pilot.

HAW

Do you happen to have any food or water report as yet?

S/C

We've completed eating one meal, we're getting ready to start another one. And I'll give you a hack on the water in a second.

HAW

Roger.

S/C

We've had 40 ounces of water, split about equally.

HAW

Roger, understand. Did you identify that meal for us?

HOU FLIGHT

Let them go and eat Hawaii.

HAW

Roger, will do.

S/C

Roger, meal c and we split it.

HAW

Roger, thank you.

HOU FLIGHT

Hawaii, Houston Flight.

HAW

Go flight.

HOU FLIGHT

Anything on that ACQ yet?

HAW

Everything looks real good, we've got some word indication on the tape dump. I'll explain that later. It's looking good though on the modulation.

HOU FLIGHT

Okay. I guess they've started eating, let's just let them go.

HAW

You want us to delete the thermal condition and all that.

HOU

Their what?

HAW

Their temperature, how they feel. That was part of the question we were supposed to ask.

HOU

Okay, I guess they're taking it now.

ASCENSION

We have valid oral temp on both crew members, Hawaii.

HAW

Okay. Do you have any comments to make on the thermal condition up there? How they feel.

S/C

Roger, we were warm during both of the rendezvous and now that we've powered down, we're starting to cool off. Neither one of us were perspiring at all.

HAW

Okay, very good. Flight, Hawaii.

HOU FLIGHT

Go ahead.

HAW

Okay, we're still showing ^{him} on 8 pounds on both systems.

HOU FLIGHT

Hawaii, you're just about out of him right now
you'll probably let him cool off a little
bit. Check on RKV to see if it's in B.

HAW

We're approaching LOS anyway.

HOU AFD

Hawaii, Cap Com, AFD.

HAW CAP COM

AFD, Hawaii.

HOU AFD

Give us a Gemini LOS Bravo.

HAW CAP COM

Its on its way.

HAW

Hawaii has LOS.

HOU

Roger.

Okay, Hawaii, what did you want to tell us
about the tape dump?

HAW

Well, when the thing first started the tape
-- I was showing that -- I was getting tape
motion and then in a little bit it came back
on and we continued the modulation for --
it was still modulating when I turned it off
after about $6\frac{1}{2}$ minutes. It looked like modulations
but we shouldn't have had that much on there
I wouldn't have thought. But I turned it off
before / ^{it} went over the hill, without waiting
until I got the end of modulation.

HOU FLIGHT

Hawaii, Houston Flight.

HAW

Go Flight

HOU FLIGHT

Why don't you go ahead and look at that tape
and see what it looks like.

HAW

We're going to.

HOU FLIGHT

Then let us know.

HAW

Roger, will do.

HOU

Guaymas go remote.

END OF TAPE

This is Gemini Control at 8 hours, 10 minutes into the flight and Gemini 9 has just been acquired by the Rose Knot Victor tracking ship off the coast of South America. Gemini 9 just began its sixth revolution a short time ago and we'll tune in now and see if we can hear some of the conversation from the Rose Knot to the spacecraft.

S/C (Garbled)

RKV Say again.

S/C It doesn't make any difference, we can rendezvous in about any type of situation you give us.

RKV Ok, they would kind of like to try this type of approach, daylight from above.

S/C (Garbled)

RKV Ok, Gemini 9. We would also like to get confirmation that you have the C-bands in the command position.

S/Cadapter continuous reentry to command, we'll go adapter to command.

RKV Roger

S/C RKV this is Gemini 9. Our fuel budget looks pretty good.

RKV Say again.

S/C Roger. Looks like we have enough fuel to hack it.

RKV Roger, very good.

RKV Cape Flight we are showing on the current, main bus current which shows that the ATDA lights are still on.

HOU FLT RKV Flight. We are going to leave the running lights on. We want to be sure the acq lights are off, the acquisition lights.

RKV Ok, fine, we'll go with it.

HOU FLT Do you concur that it looks like they are off.

RKV No, we are not sure, we think one set of the lights are on, but...

HOU FLT That will be the running lights.

RKV Ok, we are not positive of the other, that's for sure.

HOU FLT Ok.

RKV Ok, Gemini 9, we just put a TX into the spacecraft to turn TM off for us after LOS.

S/C Roger, we saw the light.

RKV Roger.

HOU FLT RKV, did you command his C-band on?

RKV That's affirm. Oh, which C-band did you want on?

HOU FLT That's on Gemini. Oh ignore that. We're going to turn it on next rev, disregard this one.

RKV Ok, he's got both C-bands in command position and with the TX in there its gonna shut both the spacecraft C-bands off.

HOU FLT Roger, that's complete configuration I gave you.

RKV Very good, and we have turned the C-band number one on the ATDA.

HOU FLT Roger.

HOU FLT RKV Flight. We would like a Gemini main.

RKV Roger, do you want it at LOS or now.

HOU FLT Why don't you give us one now and at LOS?

RKV Ok. Coming at you.

RKV Gemini 9, RKV. We have about one minute to LOS.
S/C Roger.
RKV Ok, flight, I'm not sure he had his TM switch in
the right configuration. We sent a TX but we did
not get a cutoff at TX time.
HOU FLT Roger.
RKV It might be ok to have the next site check with him
on the switch position.
HOU FLT Roger, we'll have him check to see if he's got the
TM when he comes over the hill.
RKV Roger, we are getting the command history printout
here now. We'll see what we really did send.
HOU FLT Roger.

END OF TAPE

This is Gemini Control at 8 hours, 40 minutes into the flight. Gemini 9 has just passed out of range of the Tananarive Station on its sixth revolution. There was considerable conversation on this pass between the spacecraft communicator here in the control center, Astronaut Dick Gordon, and Command Pilot Tom Stafford. We'll play that tape for you now.

RKV Flight, this is RKV

HOU Go ahead RKV

RKV Roger, we got a command entry print out and we did send TX and it - we did get a map back for it.

HOU Roger we'll check that at CSQ.

RKV Roger.

HOU RKV, Flight

RKV Go ahead RKV

HOU Did you say that you got a map on the TX?

RKV Thats affirm.

HOU Okay, thank you.

RKV Flight in addition to that the spacecraft also said he had a DCS light which

HOU Yes that light showed up as soon as it got in.

RKV Our numbers show that it was the right value that went out.

HOU And it just didn't shut off.

RKV Say again.

HOU And it just didn't shut off.

RKV Thats affirm.

Tananarive go remote.

HOU Gemini 9 Houston. Gemini 9 Houston.

S/C Hello Houston, Gemini 9 here.

HOU Roger Tom. I have some questions from the Cape concerning the shroud.

S/C Go ahead. I guess we're the experts.

HOU Yes, I'm sure you are.

I understand the shroud gap at the base of its about three or four inches, is that correct?

S/C That is affirmative. Its about three or four inches wide down at the (garbled) of the explosive bolts at the base of the shroud where it touches (garbled) in between. One coil spring was attached, still in between both of them. The other spring wasn't. (garbled)

HOU Roger, understand. Can you estimate the gap between the shroud at the strap and also at the apex.

Over.

S/C And then there was these small wires hooked to a connector that pulls the bolts.

HOU Nine, Houston.

Gemini 9 Houston.

S/C Stroked to the maximum, when the signal was sent to unrigidiz control unit B in vacuum four was real loose there. I'd say about 15 to 20 degrees.

HOU Roger Tom. Let me ask you some questions about it. Can you estimate the distance between the shroud at the strap and also at the apex? Over.

S/C Say again.

HOU Distance between the shroud halves at the strap and at the apex.

S/C Roger. It's kind of hard to tell but it stretches it out about six inches.

HOU Okay. What about the apex of it?

S/C At the top of it

HOU Yes Tom

S/C Its a good two and a half feet, maybe three feet.

HOU Okay does the strap appear to be tight or does it appear to be loose?

S/C Let's take the shroud. Its extended out/^{to}the length of those two pyro connectors on each bolt. It opened the back in about four inches and opens up like a couple of jaws and you have the total configuration. The wedge angle between the two halves is a good 20 degrees, maybe in excess to that.

HOU Okay. Can you tell the lengths of the spring cartridges? Can you see those well enough to tell me if they look like their fully extended?

S/C The spring cartridges look like they have just about reached their full stroke from the ones that we saw at the Cape the other day.

HOU Okay, understand. Does it look like you can get to the lanyard on the pyro wires just inside the shroud? Over.

S/C Theres still connectors there that - from all that I can see the pressure was up before the lanyards were ever installed.

HOU Okay, you think the lanyards are not even there?

S/C I looked as we flew in within a couple of feet or about as close as I could get the with the rear (garbled) snips, save (garbled) which was about two feet. I could plainly see the insulation on the wiring, it was frayed. You could see the connectors where they hooked into the bolts and the way it was (garbled). But I couldn't actually see the lanyards on it.

HOU Okay. I understand. If that thing is opened far enough do you think that you could get in to pull the lanyards on the QD on the umbilical? Over.

S/C Say again.

HOU Do you think you could pull the lanyard on the quick disconnect inside the shroud?

S/C Let me have Gene talk to you on that.

HOU Understand and one last question on the shroud. Has it moved in relationship to the TDA? Has it shifted fore and aft or has it rotated any? Over.

S/C It pitched up and down. In other words when the unrigidized and rigidized (garbled) it opened and closed. The data opened and closed a little bit and then rotated. The total X axis of the shroud pitched up and down a little bit, about 15 degrees. The jaws opened a little bit.

HOU Understand. Did you say it did rotate also?

S/C No not much rotation is visual mostly just the total shroud mass pitched up and down about 15 degrees.

HOU Okay, I understand. I think we've talked about that shroud long enough. You can ignore this locking on the target again at CSQ. Don't bother doing that. We're satisfied with the separation ourselves. The S-12 experimenter wants you to listen for the door opening when you activate that before the sleep period. Over.

S/C Say again.

HOU When you activate S-12 the experimenter would like to have you listen and see if you can hear the door opening.

S/C Roger, will do that.

Understand. What is the latest plans for EVA in the morning? Are they going to do it with the ATDA or without it?

HOU Tom, we're going to do it with the ATDA. And, we'll do it - we'll do the EVA prep right after re-rendezvous. Over.

S/C Roger.

HOU If we do that re-rendezvous in daylight which we would like to do down here, we're going to cut a little bit into your EVA prep but it still should give you about three hours and 45 minutes. Over.

S/C Okay. We'll probably need every bit of it.

HOU Well don't rush it. We think we can give you plenty of time to do that. But, it will be after the re-rendezvous.

S/C How does the fuel budget down there? It looks like we have plenty for using a delta H at seven miles.

HOU Yes, we think your in good shape.

S/C Yes I think we're in real good shape on the fuel. Okay, we're still keeping both cooling pumps on. A pump and both suit fans on. We're still a little warm in here.

HOU Okay, you might as well leave them on until you cool down and we'll talk to you about the temperature again over CSQ.

S/C Okay, we'll find it.

HOU Nine Houston, Tom have you had a chance to look at that auxillary receptacle yet?

S/C No, we're still busy trying to get some food and get squared away. We'll do this in the next hour or so.

HOU Okay. If you can't get that left one fixed, we've got a plan down here that you could use the right one but we'll hold up and wait and see what you say about it.

S/C OK.

HOU Nine Houston. We have 15 seconds to Tananarive LOS we'll see you later.

S/C Roger.

TAN Tananarive has LOS.
Tananarive local.

END OF TAPE.

This is Gemini Control at nine hours into the flight. The tracking ship Coastal Sentry Quebec off the coast of Japan is in contact with Gemini 9. We will play back the start of this pass for you now.

S/C You want the adapter C-Bands. Is that affirm?
CSQ That's affirm. Let's have your AOS.
S/C Roger.
CSQ AFD, CSQ Cap Com.
AFD AFD.
CSQ Are you going to leave this off or do you want the crew to go to continuous?
AFD We're planning to turn it back off over RKV.
CSQ Okay.
AFD CSQ Cap Com, AFD.
CSQ AFD, CSQ Cap Com.
AFD Roger, another item to add to your list.
CSQ Say again.
AFD I say, one more item to add to your list.
CSQ Roger
AFD On the ATDA, send C-Band off - command C-Band off. Sequence 14 Bravo at your LOS.
CSQ Roger, understand.
HOU CSQ Cap Com, Flight.
CSQ CSQ Cap Com.
HOU You've got a few things to do there. Do you think you'll get them all done in your pass?

CSQ Roger, I think we'll be able to make it, Flight.

HOU Okay, you might get the fuel cell purge started.
That usually takes longer.

CSQ Roger.

HOU Okay. And if you don't get the readouts we'll pick
them up at Hawaii.

CSQ Roger, understand.

HOU CSQ, Flight.

CSQ Flight, CSQ Cap Com. Go ahead.

HOU One more think we want you to do last, only if you
have time, is, you can advise them that at 9:21:34
there is a storm - a tropical storm - building
about 77 miles to the south of the ground track.
If he's in that attitude he might see something
down there.

CSQ Roger, understand.

HOU Okay. Go ahead.

CSQ CSQ has TM solid Agena - or on ATDA. And we saw
the ATDA as go.

HOU Roger.

CSQ We're having quite a few dropouts. Flight, we have
a reunited signal on Gemini. We have TM solid on
Gemini.

CSQ Gemini 9, CSQ Cap Com.

S/c Gemini 9. Go, CSQ.

CSQ We show you go on the ground. We'd like to inform you that we're going to command the L-Band off on the ATDA.

S/C Roger.

CSQ Roger. You can start your fuel cell purge and your on time now.

S/C Okay, commanding purge.

CSQ We also have a PLA and a slight...update for you when you're ready to copy. When you're ready.

S/C Roger, understand, and I'll give you a call in a minute.

CSQ Roger.
....the C-Band and the L-Band is off. The adapter C-Band is on and the L-Band on the ATDA is off.

HOU Roger.

S/C CSQ, Gemini 9. I'll go ahead and take some of those PLA updates and I'll have to stop you because I'm still going on with the purge.

CSQ Roger, understand. Area 7 dash 3. Hack 10:08:32. RET 400 K, 21 + 06. RETRB 26 + 57. Bank angle for all areas, rev left 85, roll right 95. Weather in this area is marginal and no separation maneuvers required for any area. Area 8 dash 3. 11:44:18. RET 400 K, 21 + 02. RETRB 26 + 58. Weather marginal. Area 9 dash 3. GETRC 13:18:56.

RET 400 K, 20 + 57. RETRB, 26 + 57. Weather good. Area 10 Delta. That's area 1 zero Delta. GETRC, 14:17:05. RET 400 K, 21 + 34. RETRB, 26 + 57. Weather good. Area 11 dash 2. GETRC, 15:51:56. RET 400 K, 21 + 23. RET 400 K, 21 + 23. RETRB, 27 + 05. Weather good. Area 12 dash 2. GETRC, 17:25:56.....(complete static)

Do you copy?

S/C Roger, Gemini 9. We got all the updates. Weather understand all ...bank left 85, bank right 95.

CSQ That's affirmative. No separation maneuvers are required.

S/C Roger, we got that. Thank you.

CSQ You ready for a flight plan update?

S/C Stand by one.

CSQ Gemini 9, be advised we're going to turn your adapter C-Band off on the ATDA.

S/C Roger, understand. You can go ahead with the update, our purge is complete.

CSQ And would you....your...switch to ECS O₂.

S/C ECS O₂.

CSQ Load es time of 07:13:19. Rev 5 95.3 east, right of Ascension. Will you bring your quantity read switch to fuel cell O₂.

S/C Okay.

CSQ zero hours, 01 minutes.012. Would you
place your quantity read switch to fuel cell H₂.
Time 09:00:00. Sequence 01 4....Do you copy?
Houston Flight, CSQ Cap Com.

HOU Go ahead, CSQ. We'll pick the rest of it up over
Hawaii.

CSQ Roger. We have LOS both vehicles.

HOU Roger. Did you get the C-Band off on the ATDA?

CSQ We got the C-Band off on the ATDA, the L-Band off
on the ATDA. We got the cryo quantity readouts
on ECS O₂ and fuel cell O₂. We did not get fuel
cell H₂.

HOU Understand.

CSQ We did not complete the flight plan update.

END OF TAPE

This is Gemini Control at nine hours 22 minutes into the flight. Gemini 9 has passed out of range of the Hawaii tracking station on its sixth revolution. We will not attempt voice communication with the crew for the next eight hours. They are in their sleep period at the present time. Flight plan calls for them to awaken at 17 hours elapsed time. We have a tape of the Hawaii pass and we will play that for you now.

HAW Gemini 9, Hawaii.

S/C Go ahead, Hawaii

HAW Roger, everything is looking good on the ground. We would like you to place your quantity read switch to fuel cell H2 position please. Roger we are going to get a tape dump on you this time. We have a flight plan update for you when you get ready to copy.

S/C Go ahead Hawaii, Gemini 9.

HAW Okay, you probably have part of this. Node 07 13 19. Rev 5 95.3 east right Ascension 20 hours 01 minutes. S-12 09 00 00, 01 after all overboard dump S-12 17 00 00 02 that is all.

S/C Gemini 9 Roger. We got Node 07 13 19, Rev 5 95.3 east, Ascension 20 hours 1 minute, S-12 09 00 01 after all overboard dump and S-12 17 00 02

HAW That is 17 00 00 sequence no 2.

S/C We got sequence one and sequence two.

HAW Roger. And also there is possible storm that will

HAW be 77 miles south of your ground track in
elapsed time of nine hours 21 minutes 30 seconds
and you have to be in the right attitude to look
at it.

S/C Okay, we will give it a try.

HAW Okay, you can place your voice read switch back
to the off position. Have you had time to
get around to that auxiliary receptacle yet?

S/C Negative. We haven't.

HAW Roger.

S/C It operates the camera all right, the problem
we had was operating the sight. We did a little
switching around, but we can't - we haven't
really made any good ^{thorough} / trouble shooting
yet.

HAW Roger. Understand.

HOU Hawaii, he says that it will operate the EVA
camera all right on the left hand side. Is
that what he said?

HAW He said it would operate the camera properly
but the sight would not operate.

HOU Okay, understand. That is good. That is what
we were really worried about.

HAW Okay.

Gemini 9, Hawaii

S/C Go ahead Hawaii.

HAW The camera is what they were really worried about.

S/C Okay, were pretty worried about the sight there for a while, but we rigged it up, from the right receptacle and the camera works okay from the left.

HAW Okay, very good.

HAW Flight, Hawaii

HOU Go Hawaii

HAW Okay, this here tape recorder is looking weird again, does V com have anything he wants me to try before I lose it. The tape motion has stopped again. That happened right after I started to dump.

HOU Do you have any modulations, Hawaii?

HAW We are getting the same thing we got last time. It doesn't look any good.

HOU Roger. Turn it off, Hawaii.

HAW Okay. Okay, I am showing tape motion again now.

HOU Understand you are showing tape motion with it in the off position.

HAW Roger.

HOU Hawaii, Cap Com, AFD.

HAW Go ahead.

HOU Leave it in the off position. We will look at it again RKV.

HAW Roger.

HAW Gemini 9, Hawaii. We have 30 seconds to LOS.
Standing by.

S/C Gemini 9. Roger. Looks like we are going to
miss that storm. We are pointed up and to the
northwest right now.

HOU Roger, understand.

HAW We have LOS on both vehicles.

END OF TAPE

This Gemini Control at 10 hours, 10 minutes into the mission. Gemini 9 is now over the continent of Africa and its seventh revolution. The crew is in a sleep period. Ground tracking confirms Tom Stafford's report that the separation maneuver was a good one. The range is now about 20 miles between the vehicles, with Gemini 9 ahead and below of the target vehicle. This sleep period ends at 17 hours elapsed time since liftoff. That will be about 12:40 a.m. CST. It appears now that the ~~flight~~ adjust maneuver will take place one hour later, 18 hours elapsed time. At that time the Gemini 9 range from the target vehicle will be about 80 miles. This maneuver will place the Gemini apogee seven miles above the target, then the crew will perform a co-elliptic maneuver to make the Delta H or the difference in altitude seven miles at all points in the orbit. They will later perform a terminal phase and rendezvous with the target vehicle from above. Ground tracking indicates that all systems on the spacecraft are performing well. This is Gemini Control, 10 hours, 11 minutes into the flight of Gemini 9.

END OF TAPE

This is Gemini Control at 11 hours and 10 minutes into the flight, and Gemini 9 is approaching the end of its seventh revolution. Tracking stations report both vehicles are go, and that both pilots appear to be sleeping. We will continue to monitor both vehicles from the ground during this sleep period. This is Gemini Control.

END OF TAPE

This is Gemini Control at 12 hours and 10 minutes into the flight. Gemini 9 is off the coast of China in its eighth revolution and the tracking ship Coastal Sentry Quebec has telemetry acquisition. The CSQ reports both vehicles are go, both pilots are apparently asleep. We show now that Gemini 9 is gradually pulling further away from the target vehicle...show a range of about 38 miles at the present time with Gemini 9 in a 160 by 158 nautical miles orbit and the target vehicle in a 161 by 160 nautical mile orbit. The Gemini 9 will continue to gradually pull further away from the target vehicle until it reaches a range of about 80 miles at about 17 to 18 hours elapse time. This is Gemini Control.

END OF TAPE

This is Gemini Control at 13 hours 11 minutes into the flight. Gemini 9 is over the South Atlantic Ocean in its 9th revolution, and is within range of the Ascension Island track station. We're about mid-way through the eight hour sleep period. We have not attempted to contact the crew since Gemini 9 was in range of the Hawaii station on the 6th revolution. We are tracking both vehicles, however, and they are go. The Flight Surgeon reports that he notices both pilots stir once in a while, but they both seem to be resting well. During the pass over the Rose Knot Victor tracking ship, off the coast of South America, Rose Knot reported Gemini 9 appears to be in slow drift rates in attitude. It's still increasing its range from the target vehicle, we show a range now of about 45 nautical miles, ahead and slightly below of the target vehicle. This is Gemini Control.

END OF TAPE

This is Gemini Control. 14 hours, 10 minutes and 31 seconds after lift-off of Gemini 9. Gemini 9 spacecraft is now in its 9th revolution and is approximately over the south central Pacific. It now leads the target docking adapter by some 50 nautical miles and is slightly below the orbital measurements of the present time of the target docking adapter, has 160.2 nautical miles apogee by 160 nautical miles perigee. The Gemini orbital values at this time is 160.2 by 158.4 nautical miles.

Both pilots are still asleep at this time and during the recent pass, some 20 minutes ago over the tracking ship Coastal Sentry, the Cap Com out there reported that the telemetry showed that both pilots were indeed asleep and that both birds were go on the ground. Prior to this sleep period, the crew activated a cover behind the hatch on the outside of the spacecraft for the S-12 micrometeorite collection experiment, in which we will study the nature of micrometeorite impacts to control exposure of special prepared plates and also to determine the effects of space environment on biological specimens. After the crew wakes up they will close this door over the experiment package by electric motor which drives the cover and the experiment will later be brought in the cabin at the end of the extravehicular activities and stored for study by the experimenter after recovery of the spacecraft. One purpose of running the experiment during the sleep period, is that the spacecraft is in a drifting flight and no thrusters are being fired and therefore the experiment plates would not be contaminated.

At 14 hours and 12 minutes and 45 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control, 15 hours 10 minutes and 31 seconds after lift-off of Gemini 9, and 51 hours 50 minutes and 7 seconds after lift-off of the target vehicle. Flight Director Cliff Charlesworth, the friendly Green team of Flight Controllers is taking over here in Mission Control, from the Black team. Gemini 9 is now in its 10th revolution, the target is in its 39th revolution. The tracking ship Coastal Sentry should acquire the spacecraft in about 7 minutes. During the pass over the tracking ship Rose Knot, during the last revolution, Spacecraft Communicator, ~~Keith~~ ~~Kundla~~, confirmed that both vehicles were go as it went over the hill. The Flight Director released the RKV for the night, since no more of the spacecraft revolutions for the next several hours will pass over the Rose Knot. At Gemini 9, ground elapsedtime of 15 hours 11 minutes 33 seconds. This is Gemini Control.

END OF TAPE

This is Gemini Control. 16 hours, 10 minutes and 30 seconds after Gemini 9 lift-off. During the pass over the Coastal Sentry tracking ship midway through the last revolution, the spacecraft communicator on the ship reported **that** both vehicles were go and that both crewmen were still asleep. The next station to acquire Gemini 9 will be the Canary Island station at approximately 10 minutes.

The spacecraft is now beginning its 11th revolution and the target is in its 41st revolution. At this time the spacecraft is leading the target by some 80 nautical miles. At 16 hours, 11 minutes and 10 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control at 17 hours 10 minutes and 30 seconds after lift-off of Gemini 9. The next station which will acquire the Gemini 9 spacecraft will be the Antiqua station of the Eastern Test Range some 34 minutes from now, at which time the crew will be waked up and updates for the series of third re-rendezvous maneuvers will be passed up to the crew. First of these maneuvers will take place at 18 hours, 23 minutes elapsed time. It will be a ^{very} small posigrade burn of two feet per second. It is the first in a series of maneuvers for the third re-rendezvous from above.

Gemini 9 is now nearing the end of the 11th revolution and is presently over the south Pacific just east of Australia. At 17 hours, 11 minutes, and 25 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control, 18 hours 10 minutes and 30 seconds after lift-off. Gemini 9, presently, is in the 12th revolution over Arabia, during the present pass over the Eastern Test Range the Spacecraft Communicator Neil Armstrong here in Mission Control, gave Gemini 9 a call. The crew was awake at that time, in fact they had already started powering up the spacecraft and they further confirm that the door to the micrometeorite collection experiment outside the spacecraft on the adapter section have been closed at that time. Armstrong passed up to the crew several maneuver up-dates, and gave them a go to begin a fuel cell purge. Shortly thereafter the spacecraft passed over the Canary Island tracking station, at which time the plan landing area up-dates for several revolutions in the future, were passed up to the crew. We have a tape of the combined passes over the Antigua station, Canary Islands. and a brief exchange of comment between Neil Armstrong and the crew over the Kano, Nigeria, voice remoting station. Let's here that tape now.

MC LOS Antigua.....

MC Gemini 9, Houston....Gemini 9, Houston. Standing
by for your call.

S/C Good morning Houston, Gemini 9.

MC Good morning, how are you doing?

S/C Warmed up, we're down now to 0 0 0.

MC You say you have, you've started your power up?

S/C Roger. Platform is fairly well aligned.

MC Is your computer up yet?

S/C Hold on for just a second.....

MC Okay would like to have you turn it on and tell
us whether you get a running light.

S/C Roger.

MC In pre-launch.

S/C Computer coming on.

MC While you're waiting you can turn the S-12 collector door closed.

S/C Roger. We've already got the collector door closed.

MC Roger. I've got an R SEP T change and some maneuver up-dates when you're ready to copy.

S/C This is Gemini 9 we have the computer running, 18 seconds.

MC Very good, glad to hear that then. Let me know when you're ready to copy the R SEP T, and maneuver up-dates.

S/C Go ahead Neil.

MC Okay, you're R SEP T, is now address 54, 74 966, this is a fairly big change but we've checked it out.

S/C Understand 54, is now 74 966.

MC Roger, and your elevation angle or depression to align the platform will be minus 9 degrees.

S/C Roger, understand.

MC Okay and don't forget that you've got to change address 24.

S/C Okay.

MC Okay we're ready for.....your height adjustment maneuver.

S/C Okay, shoot.

MC Okay let me give you the phase adjust first, the

MC GETB 18 23 19er, Delta V 2.0, burn time 3 seconds.
Yaw 0, pitch 0, address 25, 000 20, 26 and 27
all zips, aft thrusters posigrade, now I'll go
ahead with the height adjustment now....19 GETB
is 19 08 16, Delta V 17.0, burn time 22 seconds.
Yaw 0, pitch 0, address 25, 00 170, address 26
all zips, address 27, zips, aft thruster posigrade,
that's height adjustment, want us to go ahead?

S/C Okay was that two height adjust ~~or~~ was the
first one attitude also.

MC The first was phase adjust.

S/C Okay. Phase adjust was it, 18 24 19er? Two feet
per second, 3 second burn, yaw 0, pitch 0, 25 is
000 20, 26 and 27 all zeros, after thruster posigrade.

MC Roger, that's correct I've got a mode up-date.

S/C I'd like the GETB of the height adjust, please.

MC Okay the GET burn of the height adjust is 19 08
16.

S/C19 08 1 something.

MC That's 19 08 16.

S/C16 Roger, and I count the rest to be 17 feet
per second, 22 second burn, yaw 0, pitch 0, 25
00 170, 6 and 7 zeros aft thrusters, posigrade.

MC That's correct. And I got a note for you.

S/C Okay.

MC It says time is 16, 14, 21, it's ~~rev~~ 11, 43 degrees

MC west, right ascension 19 hours 50 minutes.

S/C Roger copy note to be 16 14 21, ~~rev~~ 11,
43 degrees west of Ascension 19 hours 15 minutes.

MC Roger that's correct. You can do a fuel cell
purge between now and Canary which will be
about 5 minutes or so from now, and they will
have a block up-date on PLA's for you at Canary.
Advise that they've got a shroud in work, Dave Scott
is out at Los Angeles working on the procedures for
it.

S/C Okay fine, and you say go ahead with the fuel cell
purge now?

MC Yes, that's correct. We're approaching LOS here
we'll give you the PLA's over Canary.

S/C Roger, how you reading us Neil?

MC Reading you load and clear Tom.

MC LOS Antigua.

CNV This is Cape Contact,.....
We have tape contact Flight.

END OF TAPE

CYI Canary Islands has Gemini TM solid.

HOU FLIGHT Roger.

CYI We have target on TM solid.

HOU FLIGHT Roger.

CYI He's purging O2 in section I, Flight.

HOU FLIGHT Roger.

CYI Canary has C-band track.

HOU FLIGHT Roger.

CYI Target is go also, Flight.

HOU FLIGHT Spacecraft and target is go.

CYI That's affirmative. He's purging O2 in section II.

HOU FLIGHT Roger.

CYI We'll get a quantity read-out as soon as he ignitions,
this purge, Flight.

HOU FLIGHT O.K.

CYI Gemini 9, Canary Cap Com.

SPACECRAFT Canary, Gemini 9.

CYI Roger, have a PLA update for you, when you are ready
to copy.

SPACECRAFT Could you give us a hack at GET 175700?

CYI Roger, will do. 30 minutes, 30 seconds in hack.

SPACECRAFT After the hack you can go ahead with the update.

CYI Roger, will do. 3, 2, 1, Mark. 175700.

SPACECRAFT Roger, give us a hack at 10, just for a recheck.

CYI Roger. 3, 2, 1, Mark. 10 seconds.

SPACECRAFT Roger, we're in sync.

CYI Roger. We've completed our command sequence/^{Flight,}on the

ATEA.

HOU FLIGHT Roger. Canary, send us another OBC Class I.

CYI Roger.

CYI Gemini 9, are you ready for your PLA update?

SPACECRAFT Roger, all set, any time.

CYI Roger, 13 dash two, 190232, 21 plus 22, 27 plus 22, Roll left 85, roll right 95, weather good, negative sep maneuver. 14 dash one, 20 28 25, 22 plus 35, 28 plus 25, roll left 85, roll right 95, weather good, negative sep maneuver. 15 dash one, 22 06 07, 21 plus 11, 26 plus 59, left 85, right 95, weather good, sep maneuver. 16 dash one, 23 41 40,

HOU FLIGHT Canary systems, Houston Flight.

CYI 21 plus 18,

CYI Canary systems, here.

HOU FLIGHT If Mike could speed it up, Retro advises that the last three columns are all the same, he's just reading the time.

CYI Rog. Good, affirmative on the sub-maneuver.

SPACECRAFT Three columns all....got that update.

CYI Gemini 9, the last three columns are all the same, here on out, so we'll just give you the first, O.K.

SPACECRAFT O.K., now what were the first two areas that you gave me?

CYI Say that again.

SPACECRAFT Give me the first two areas...just the areas, I got all the numbers, but what were the areas on the first two?

CYI O.K., the first area was 13 dash two; the second area

CYI was 14 dash one.

SPACECRAFT O.K., you can go ahead.

CYI[O.K., the next area is 17 dash two, 25 26 01, 21 plus 15, 27 plus 12, could you put your quantity read switch to ECS 02?

SPACECRAFT Rog.

CYI O.K., area 18 dash four, 28 07 53, 21 plus 11, 27 plus 16, area 19 dash four, 29 43 26, 21 plus 18, 27 plus 19, area 20 dash three, Gemini 9 give us fuel cell 02, please. Ok, area 20 dash three, 31 02 25, 21 plus 02, 27 plus 07, and give us fuel cell H2. That's the end of the PLA update, Gemini 9.

SPACECRAFT Roger, the only question that I have is 20 dash three RETV, please say again.

CYI RETV for area 20 dash three, 27 plus 07.

SPACECRAFT Roger, and the only two that require sep maneuvers are 151 and 161 is that correct?

CYI That's affirmative. Negative on that, the sep maneuvers comes from one through all the rest 151 through 20 dash three. You have a sep maneuver with all of those.

SPACECRAFT Roger, I've got them all.

CYI O.K., could you give us a prop quantity read-out, please?

SPACECRAFT Roger, reading at about 39 percent.

CYI Roger, copy 39. We have you as "GO" on the ground here, Gemini 9, how did your fuel cell purge go?

SPACECRAFT Fuel cell purge went well and we're "GO" up here.

CYI Roger. ~~Good, thank you.~~

HOU FLIGHT Canary, Houston Flight.

CYI Go ahead, Flight.

HOU FLIGHT You might advise him that you did turn the L-band beacon on....on the ATDA

CYI Roger. Gemini 9, Canary. We did turn the L-band on on the ATDA .

SPACECRAFT Roger.

CYI 9, Canary. You can turn your quantity read off at this time. Canary has C-band LOS, Flight.

HOU FLIGHT KANO, go remote.

KANO Roger. Will go.

CYI Canary has Gemini LOS.

HOU FLIGHT Roger, Canary.

KANO Kano has contact.

HOU FLIGHT Roger, Canary. Everything look O.K. as it went over the hill?

CYI Everything looked real good, Flight, all the way through.

HOU FLIGHT O.K.

HOU FLIGHT Gemini 9,^{/Houston} one minute from LOS at Kano.

SPACECRAFT Roger, Houston. All set up for our burn...garbled... Houston.

HOU FLIGHT Roger, congratulations for making a pass seven day.

SPACECRAFT Roger, Neil, thank you.

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/4/66, 2:10 A. M. TAPE 78, PAGE 1

This is Gemini Control at 18 hours, 30 minutes and 30 seconds after liftoff. Gemini 9 at the present time is within about three minutes of being acquired by the Carnarvon, Australia, tracking station. It is now over the Indonesian republic midway through the twelfth revolution. It's unlikely that there'll be much business transacted during this Carnarvon pass since it only lasts a little over three minutes. At 18 hours, 30 minutes and 58 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 18 hours, 50 minutes and 30 seconds after liftoff. Gemini 9 presently is over the South Central Pacific and has just passed the Carnarvon, Australia, tracking station. Command Pilot Stafford reported that on the phase adjust maneuver there were no residuals. They were all zeros on the IVI which means that the burn was done properly, and there were no errors that crept in. The spacecraft communicator at Carnarvon advised the crew that there were some flight plan updates coming up. For instance, over Antigua, they would get a go-no go for landing area 31-1; and that over Canary, the crew is scheduled to make a status report. We have a tape of this brief pass over the Carnarvon station which we will play for you now.

CRO Carnarvon has ac aid contact.

HOU FLT Roger, Carnarvon.

CRO All systems go on Gemini.

HOU FLT Roger.

CRO Telemetry's on on the ATDA. All Systems go.

HOU FLT Roger.

CRO Gemini 9, Carnarvon Capcom.

S/C Carnarvon, 9.

CRO Roger, how did the phase test go?

S/C All on time, and all residuals zero.

CRO Roger. Would you give me a readout on the AMU H_2O_2 pressure and temperature.

S/C OK. The temperature is holding and has been holding at about 65 degrees, and the pressure is blocked out 85 psi.

CRO Roger. I've got a flight plan update -- a short one for you when you're ready to copy.

S/C Standby one. OK, Bill, go ahead.

CRO OK. At 19 hours, 19 minutes, Antigua, rev 13 -- a go-no go for 31-1. At 19 hours, 30 minutes at Canary on rev 13 -- a crew status report.

S/C Can I have that time again at Canary for crew status.

CRO 19-30.

S/C 19 +30. Rog.

CRO OK. I've also got a star update for you.

S/C OK. Go with the star update.

CRO OK. The time -- 19:08:16, and I don't know if I can pronounce it, but I'll give it a try -- Elferez, or would you buy Elferez. It's 3.5 degrees up and 4 degrees left.

S/C That's Elferez.

CRO Elferez sounds good. 19:08:16 -- 3.5 up, 4 left.

S/C Roger.

CRO Flight, Carnarvon.

HOU FLT Go ahead.

CRO Do you want to get prop quantity readout?

HOU FLT Negative.

CRO OK. Gemini 9, Carnarvon. We're coming up on LOS in about 40 seconds.

S/C Gemini 9. Rog.

MISSION COMMENTARY, GEMINI 9A (2), 6/4/66, 2:30 A. M.

TAPE 79, PAGE 3

CRO Carnarvon has spacecraft telemetry LOS.

HOU FLT Roger, Carnarvon.

END OF TAPE

This is Gemini Control in 19 hours 10 minutes 30 seconds after lift-off. Gemini 9 in 7 minutes will be acquired by Grand Turk Island station of the Eastern Test Range, at which time Neil Armstrong will carry on further conversation with the crew. Some 2 minutes ago the crew was scheduled to carry out the height adjust maneuver with a 17 foot per second posigrad burn, additional maneuvers will be feed up to the crew for the second re-rendezvous in these subsequent station passes. At 19 hours 11 minutes and 8 seconds after lift-off this is Gemini Control.

END OF TAPE

CYI

Canary has Gemini TM solid

This is Gemini Control, 19 hours 30 minutes and 30 seconds after lift-off. Gemini 9 is presently over the Canary Island tracking station. In fact within the past minute was acquired by that station. During the pass over the Eastern Test Range, the spacecraft communicator Neil Armstrong gave the crew a go for landing area 31 dash one. Command pilot, Stafford, reported that the height adjust maneuver had no residues, in other words there were no errors in the maneuver. Armstrong also passed up some baseball scores that the crew was interested in.

We have a tape of the Grand Turk Island and the Antiqua pass and hopefully we will have a tape of the present/^{Canary}pass at the end of the Eastern Test Range. Let's listen to that tape now.

GRAND TURK Acquisition, Grand Turk.

HOU FLIGHT Gemini 9, Houston.

ANTIQUA AOS, Antiqua.

HOU FLIGHT Gemini 9, Houston.

SPACECRAFT Hello Houston, Gemini 9, how do you read?

HOU FLIGHT Roger, Tom. Read you loud and clear, how me?

SPACECRAFT Roger, read you now loud and clear, Neil.

HOU FLIGHT O.K., could you give us a oxide temperature, please? Y

SPACECRAFT Roger, 65 degrees.

HOU FLIGHT Roger, 65 degrees and I have a NSR update for you, when you are ready to copy.

SPACECRAFT Roger, standby. Ready to copy.

HOU FLIGHT Ok, GETB 1953 27, Delta-V 14.3, Burn time 25 seconds, Yaw 180, Pitch 20 down, 2 0 down, address 25, zero zero one three four (00134), address 26, 90049, address 27 zips, forward thrusters posigrade up, go ahead.

SPACECRAFT Houston, Gemini 9 you are coming in somewhat broken

SPACECRAFT on that, NSR update GETB is 19 45 27, Delta-V is 14.3, duration is 25 seconds, Yaw 180, Pitch 20 down, 2500134, 26 90049, 27 zeros, forward posigrade up.

HOU FLIGHT That's correct except I would like to correct your GETB, that's 195327, go ahead.

SPACECRAFT Roger, got 195327 GETB.

HOU FLIGHT That's right and we're using the forward thrusters here so that yall, you won't have to turn around lose radar lock and that stuff.

SPACECRAFT Fine, thank you.

HOU FLIGHT O.K., give us prop quantity please.

SPACECRAFT Roger, prop quantity is 35 percent.

HOU FLIGHT O.K., 35...and you will have a crew status report over Canary here in about 10 minutes or so, I'd like to tell you what maneuver plan is right now.

SPACECRAFT O.K.

HOU FLIGHT O.K., After NSR, you'll have about an hour and five minutes before TPI and you'll be hitting TPI just about sun-rise and the rest of the maneuver from TPI on in will be in daylight.

SPACECRAFT Roger.

HOU FLIGHT And we're talking about seeing whether we can get the lights on for you before TPI for a backup.

SPACECRAFT How's the power going on the ATDA, is it getting pretty low?

HOU FLIGHT Well, we don't have any too much in those squib batteries. How'd your height maneuver come out?

SPACECRAFT All residues were zero, we had one tenth of that at 81.

HOU FLIGHT Very good.

SPACECRAFT We're going to round out a 180.

HOU FLIGHT O.K., we'd like to advise you are go for 31 dash one.

SPACECRAFT Roger, 31 dash one. How are things in Houston this morning?

HOU FLIGHT We're busy as beavers down here.

SPACECRAFT I can imagine. You guys keep some terrible hours down there.

HOU FLIGHT Yea, you do too. The Astroslost last night to Pittsburgh 7 to 2.

SPACECRAFT How did the Cubs do?

HOU FLIGHT Standby. Cubs lost 8 to 6 to Cincinnati.

SPACECRAFT Well, I'm a double loser.

HOU FLIGHT You've got to expect a few loses. We've just been talking to Dave Scott and Jim McDivitt at some length, they've been climbing around a shroud out at Douglas for the last few hours and they advised the outside is no problem, the inside may turn out to be a problem...there is quite a bit of sharp edges and things on the inside, cotter keys and one thing or another.

SPACECRAFT Roger.

HOU FLIGHT Did you...did you happen to just punch start comp or change modes or something in the computer?

SPACECRAFT Yeah, I checked out my load at 25, 6, and seven.

HOU FLIGHT O.K., Big Brother is watching down here.

SPACECRAFT Roger, Neil. Looks like our computer is cleared up completely. This is only about the first day after after....just about NSR when we ran into this problem and late yesterday evening everything looked real good.

HOU FLIGHT O.K., Tom, it looks^{all}/ok on the ground to us too.

SPACECRAFT O.K., I don't know what that glitch was. Also we changed/^{cords}and I have change utility cords where I've got my camera and optical sight going/^{O.K.}over here .

HOU FLIGHT Roger, I understand. Do you have...you don't have the radar on yet do you?

SPACECRAFT No, I don't. Do you want me to turn it on?

HOU FLIGHT Standby. Yeah, we'd like to have you turn it on and see if you can get a lock and maybe you can report a range reading over the Canarys and help flight a little bit here.

SPACECRAFT Roger, we've got it at standby.

GRAND TURK Hello, this is Grand Turk.

HOU FLIGHT We're not going to have much track after NSR to help you out with. Houston is about to have LOS at Antiqua.

SPACECRAFT Roger.

CYI Canary has Gemini ac nid contact.

HOU FLIGHT Roger, Canary.

HOU FLIGHT Carnarvon, send us a contingencybravo Gemini, when you get acquisition. Canary, I mean.

CYI Roger, Bravo for contingency. Canary has Gemini TM solid.

HOU FLIGHT Roger.

CYI We have C-band track, Flight.

HOU FLIGHT Roger.

CYI He has lock on.

HOU FLIGHT Roger.

CYI Gemini is "GO", Flight.

HOU FLIGHT Roger, standby to copy a maneuver.

CYI Roger, standing by.

HOU FLIGHT GET burn 19 plus 54 plus 24, Delta-V 14.4, Burn time 0 plus 25, Yaw 180, Pitch 38 down, Core 25, 00114, Core 26, 00089, Core 27, all zips, thrusters forward, posigrade up, coelliptic update.

CYI Roger, that GETV was 195424, Delta-V 14.4, Delta-T 0 plus 25, Yaw 180, Pitch 38 down, core 25 00114, core 26, 00089, 27 all zips, forward posigrade up, co-elliptic.

HOU FLIGHT That's affirmative. Gemini 9.....(pause)

CYI Zero plus 25, yaw, 180, pitch 38 down, address 25 00114, address 26, 0089, address 27 all zeros, thrusters forward, maneuver posigrade and up, co-elliptic, did you copy?

SPACECRAFT Roger, NSR update, GETB is 195424, 14.4, 25 seconds burn time, yaw 180, pitch 38 down, 25 is 00114, 26 is 00089, 27 all zeros, forward thrusters, posigrade up.

CYI That's affirmative Gemini 9.

END OF TAPE

S/C Canary we're now at 83.8 miles.

CYI Roger, copy.

CYI Gemini 9 we're standing by for your food report.

S/C Roger, we have consumed $4\frac{1}{2}$ meals, and 110 ounces of water.

CYI Roger 110 ounces....Flight, Canary, do you want to break this down into specific meals on this foodreport?

MC Negative on that, but we would like a sleep report.

CYI Roger...Gemini 9 could you also give me a sleep report.

S/Con 8 hours of dozing....

CYI Roger, copy....Flight, Canary.

MC Go ahead.

CYI Okay he gave me a radar range of 83.8 miles, and also issuing a fuel cell H₂ tank pressure of 258 the heater could be turned off now, but you have that in R.

MC Fuel cell what?

CYI Hydrogen tank pressure.

MC And what was it, 2, what?

CYI ...258....

MC Roger

S/C Canary we're 82.3 miles with a range rate of 69 feet per second.

CYI Roger copy.

CYI Did you get that last range rate, Flight?

MC We copied.

CYI Okay.

MC ECOM'S satisfied with that fuel cell pressure.

CYI O ay, very good.

MC Canary send us another OBC.

CYI Roger....Canary has C-Band LOS.

MC Kano go remote.

KNO Roger, power remote.....

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/4/66, 5:30 A. M. TAPE 83, PAGE 1

This is Gemini Control at 19 hours, 50 minutes and 30 seconds after liftoff. Gemini 9 spacecraft is presently crossing the Arabian peninsula and will shortly cross into the -- over the Indian Ocean. There have been no further voice contacts with the crew since the pass over the Canary Islands tracking station. The spacecraft will be acquired by the Carnarvon, Australia, tracking station within the next 15 minutes. At 19 hours, 51 minutes and three seconds after liftoff, this is Gemini Control

END OF TAPE

This is Gemini Control 20 hours, 10 minutes and 30 seconds after liftoff. At the present time, Gemini 9 is over the Carnarvon, Australia, tracking station, and the crew is in conversation with the spacecraft communicator at that station. The pass over the station will last some eight minutes and 47 seconds. The crew has also reported the results of the coelliptic maneuver, and they've also reported that 32 percent of the onboard OAMS propellant are remaining. We have the first portion of the tape of the Carnarvon pass currently underway, which we will play for you now.

CRO Carnarvon has ac aid contact.

HOU FLT Roger.

CRO Gemini telemetry's solid.

HOU FLT Roger.

CRO All systems go.

HOU FLT Roger.

CRO Carnarvon has ATDA telemetry solid.

HOU FLT Roger.

CRO Gemini 9, Carnarvon Capcom.

S/C Carnarvon

CRO Roger. Would you turn the tape recorder power circuit breaker off.

S/C Turn off.

CRO Would you verify that the telemetry standby control switch is off.

S/C Off. It's off.

CRO Roger. Could you give us a prop quantity readout.

S/C Roger. Thirty-two percent.

CRO Roger. How'd the NSR burn go?

S/C On time at 80 was 081 -- was 01 and 82 was about 02.

CRO Roger. I've got a general phase backup for you when you're ready to copy.

S/C Standby. OK, go.

CRO GETB -- 20:55:28. EPNSR -- 01:01:04. Delta V -- 16.7. Burn time -- 0 +21. Core 25 -- 90147. Core 26 -- 00075. Core 27 -- 00020. 16.5 forward, 0.3 up, and 2.5 right. Range -- 16.3 nautical miles. Range rate -- 64 feet per second. Azimuth -- 178.5 right, elevation -- 27.4 down. Range and range rate are two minutes and ten seconds prior to TPI.

S/C This is Gemini 9. Roger. We got the backup. Thank you.

CRO Flight, Carnarvon.

HOU FLT Go ahead.

CRO OK. I turned off the tape dump and also the standby transmitter.

HOU FLT OK. Are you showing radar lock?

CRO That's affirm.

HOU FLT Roger. Could we ask him for a range rating, please.

CRO Roger. Will you give me range and range rate.

HOU FLT Do you read it on the ground?

CRO We're getting it on the computer.

S/C Right now we're 54.3 miles.

CRO Roger.

S/C At 86 feet per second.

CRO Rog.

HOU FLT Copy. OK. I guess you'd better turn his ac lights on.

CRO Roger. Just did, Flight. The ac lights are on, 9.

S/C Roger.

HOU FLT Carnarvon, Flight.

CRO Go ahead, Flight.

HOU FLT Send us a Gemini LOS main.

CRO Roger.

HOU FLT Carnarvon, Flight.

CRO Go ahead.

HOU FLT Send us an OBC every data point, please.

CRO Roger. Will do. Flight, Carnarvon.

HOU FLT Go ahead, Carnarvon.

CRO OK. The last range we got out of the computer was 323 KC; and the range rate -- 79.7.

HOU FLT OK.

CRO Gemini 9, Carnarvon. We're one minute to LOS.

S/C Roger. Carnarvon, Gemini 9 is at 71.9 miles 88

END OF TAPE

This is Gemini Control at 20 hours 30 minutes and 30 seconds after lift-off. Gemini 9 at the present time is over the South Central Pacific, nearing the end of the 13th revolution. Some 20 minutes from now the Corpus Christi station on the state side series of stations in the space flight network will acquire Gemini 9. Some 19 minutes from now, just prior to the acquisition by the Texas station. The terminal phase initiation maneuver for the 3rd re-rendezvous is scheduled at 20 hours 31 minutes and 6 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control, 21 hours, and zero minutes and 33 seconds after lift-off. Gemini 9 is presently over the stations of the Eastern Test Range and will be acquired by the Canary Islands tracking station in approximately three minutes. During this state side pass currently underway, Command pilot Stafford commented that the range to the target in his first report was approximately 21 miles and they were approximately seven miles above the target. The second report was 18 miles closing and the last report that we heard he was 17.72 miles from the target. We have the first portion of the state side pass on tape. Let's see if that's ready to roll now.

HOU Texas go remote. Texas go remote...Texas go remote.

TEX Texas is remote.

HOU FLIGHT Gemini 9, Houston standing by.

GRAND TURK Acquisition Grand Turk.

SPACECRAFT From the rendezvous from above, we've reflected moon light on the target.

HOU FLIGHT This is Houston, no answer is required....remember to turn ac lights off.

SPACECRAFT Roger,^{Neil}we have no ac lights this boy has got him in reflected moon light at 20 miles.

HOU FLIGHT Rog, understand.

SPACECRAFT Houston, Gemini 9, elevation 200.9 reads 21.04.

HOU FLIGHT Houston, roger.

ANT AOS Antiqua.

SPACECRAFT Houston, elevation at 201.7 reads 19.92 reads rates 70.

HOU FLIGHT Houston, roger.

SPACECRAFT Star been reflected sun light into sun rise now.
Houston, Gemini 9, elevation 203.0 18.82 miles
66 feet per second.

HOU FLIGHT Houston, roger. Houston has commanded ac lights
off.

SPACECRAFT In the clouds. Houston, Gemini 9 elevation 204.2
reads 17.72.

HOU FLIGHT Houston, roger.

SPACECRAFT Houston, close loop is 20 forward, two left, three
down.

HOU FLIGHT Houston, got it.

SPACECRAFTDoesn't look good from here at this time.
Houston, Gemini 9, Point D is 206.0 , 16.60 miles
range rate 33.

HOU FLIGHT Houston, roger.

SPACECRAFT Houston, this is 9 and we're taking a backup solution
staying close loop.

HOU FLIGHT Roger, understand.

SPACECRAFT Backup reads 617 forward and three up. 17 forward
and three up.

HOU FLIGHT Houston, roger.

GRAND TURK LOS, Grand Turk.

HOU FLIGHT Houston approaching LOS.

ANT LOS, Antiqua.

END OF TAPE

This is Gemini Control at 21 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 at the present time is over the Canary Island tracking station and in his comments to the spacecraft communicator at Canary, Command Pilot Stafford commented that the onboard radar was doing beautifully in the measurements of the distance to the target, and at last report he was 10.21 miles from the target and closing. We have the beginning portion of the tape of this pass, so let's roll it now.

CYI Canary has ac aid contact. Canary has Gemini TM solid.
 Target TM contact.

HOU' FLT Roger.

CYI We have C-band track, Flight.

HOU FLT Roger.

CYI All systems look good, Flight.

HOU FLT Roger.

CYI We're indicating a range

S/C This is Gemini 9 transmitting in the blind. We will align the
 platform after five minutes and have 30 percent fuel

HOU FLT Give him a roger on that.

CYI Roger, 9, Canary Capcom. Roger. We copy.

S/C Roger. We'll align the platform and close loop this

 We used the backup solution. We have 30 percent fuel remaining.

CYI Roger. Copy.

S/C And we cannot see him against the sunlit ocean down below even
 though we're down to 12 miles.

CYI Roger.

S/C Radar is doing beautifully.

CYI Did you copy all that, Flight?

HOU FLT Copy.

S/C Canary, this is Gemini 9. Our last point elevation -- 215.6.
Range -- 11.7 miles. Range rate -- 78.

CYI Roger.

S/C Canary, this is Gemini 9. We're aligning no angle, no range rate.
We're at 10.21 miles.

CYI Roger.

S/C Canary, this is Gemini 9. We're aligning, and I do not get any
range or range rate out of the computer at this time.

CYI Roger, Gemini 9.

HOU FLT We copy.

S/C Houston, Gemini 9. Or Canary, Gemini 9. Elevation -- 227.2 --
7.18 miles.

CYI Roger.

S/C And we're passing over the sand dunes in the Sahara, also some of
the lava flows here and are looking straight down at him, and I
still can't see him.

CYI Roger, 9. Houston Flight, Canary Capcom.

HOU FLT Go ahead.

CYI At TX time, we're at DL 12. The time and mode is not coming up
on the ground. As we out of the 12 18 here.

HOU FLT The time and mode is not counting up?

CYI That's affirmative.

HOU FLT What mode is he in, Canary?

CYI He's in rendezvous.

HOU FLT Send us another summary, Canary.

CYI Which one, Flight?

HOU FLT Gemini. OBC.

CYI OBC. Roger.

HOU FLT Canary, send us another computer OBC.

CYI Roger. CanaryLOS

HOU FLT Kano brought him up. Roger, Canary. How'd he look?

CYI Systems look great right near the end there. He went into search and looked like he was looking around quite a bit.

HOU FLT Kano, go remote.

KNO Kano remote.

S/C Gemini 9. Canary, Gemini 9. Elevation 233.9. 5.79 miles. 51 feet per second.

HOU FLT Houston standing by. Houston standing by.

S/C Roger, Houston. We're down to a little over three miles looking straight down into Sahara Desert. There's no visual contact. We're locked on -- following on radar.

HOU FLT Understand.

S/C Houston, elevation is 238.4. Range 5.06. Range rate 29.

HOU FLT Houston, roger.

MISSION COMMENTARY, GEMINI 9A (2), 6/4/66, 4:50 A. M. TAPE 87, PAGE 4

S/C Houston, this is Gemini 9. Elevation --4.0. Range --
4.31. Range rate -- 44.

HOU FLT Houston, rog. Houston's one minute to LOS.

S/C Rog.

HOU FLT OK, 9, Houston. Advise your fuel cut off as five percent on the
gauge.

S/C Down to three miles and still no visual contact

HOU FLT Houston, roger.

S/C Houston, finally have a little spot down there

HOU FLT Houston, roger.

END OF TAPE

This is Gemini Control at 21 hours, 40 minutes and 30 seconds after lift-off. Gemini 9 is within a few seconds of acquisition by the Carnarvon Australia tracking station at this time they have a fuel purge...fuel cell purge scheduled, and they should be beginning the preparation for extravehicular activity and having a meal. Meanwhile the U.S. weather bureau space flight meteorology group here in Mission Control said that weather conditions remain satisfactory in the areas of prime concern for continuation of the flight of Gemini 9 during the next two days and probably through the remainder of the mission. The mid-Pacific landing zone centered about 300 miles north east of Honolulu, has partly cloudy skys, winds out of the southeast as you were south west about 12 knots and seas at four feet. In the western Pacific landing zone about 700 miles south west of Toyoko is mostly cloudy skys with scattered showers. In the northern portion of the zone the winds are northwestern at 10 to 15 knots and seas at four feet. In the southern portion, they are 20 to 20 knot winds and seas ranging up to eight feet. In the primary landing zone in the western Atlantic, centered about 800 miles east of Miami partly cloudy skys with a few widely scattered showers, winds are out of the east at 15 to 18 knots and seas range from four to five feet. Let's see if we can't cut in on the Carnarvon pass at this time.

SPACECRAFT What did you say Carnarvon? We are in position with them. We've got about 18 percent of fuel remaining.

CRO Roger.

SPACECRAFT And...what's our status now on EVA?

CRO Standby one.

HOU FLIGHT Carnarvon, Houston Flight.

HOU FLIGHT I didn't copy that first, say again.

CRO He said that his status on fuel was 18 per cent and he would like to know what his EVA status is.

SPACECRAFT Carnarvon, Gemini 9

HOU FLIGHT Is he station keeping?

CRO Standby one, go ahead 9.

SPACECRAFT It's going to take us a lot of fuel to stay here for EVA for three hours.

CRO Roger, understand. Standby one and I'll talk to flight.

Flight,

CRO Flight Carnarvon

HOU Go ahead.

CRO Okay. He has got about 18 per cent remaining and to station keep for any length of time is going to use a lot of fuel up, I guess and he must know about what you feel about EVA.

HOU Tell him to stay with it until we get to the states. We will brief him fully. Go ahead with his EVA prep. Okay, that is it for now.

CRO Roger. Gemini 9. We would like for you to go ahead and station keep until we get to the states and then we will brief you over the states. Go ahead and continue with the EVA preparation.

S/C (Garbled)

HOU Go ahead with his eat period, Carnarvon.

CRO Is that eat period, Flight?

HOU Eat period, that is correct.

CRC Gemini 9, Carnarvon.
Did you get a chance to purge your fuel cells?

S/C We haven't had a chance to do anything for a little bit here.

CRO Okay, well we will stand by here if you want to start the purge.

S/C Okay. I will purge.

CRO Flight, Carnarvon.
Houston Flight, Carnarvon.

HOU Go ahead, Carnarvon.

CRO The L-Bands are still on, do you want them to turn it off?

HOU Affirmative, Carnarvon.

CRO Okay. Gemini 9, Carnarvon. Would you turn off the L-Band radar?

S/C Roger. You talking about the L-Band?

CRO That is affirmative.

S/C It is off.

CRO Flight, Carnarvon.

HOU Go ahead, Carnarvon.

CRO The L-Band radar is off and command L Beacon off.

HOU Roger.

CRO They turned on the C-Band beacon on the ATDA.

HOU Roger.

HOU Carnarvon, Houston Flight

CRO Go ahead Flight.

S/C] Carnarvon, Gemini 9. Are we still in contact?

CRO That is affirmative.

S/C It appears I have got about 17 percent fuel.

CRO Roger.

S/C And we are going to go through another one in station keeping during three hours. Would you pass that on to Flight?

HOU We copied.

CRO Roger.

S/C Roger. Now that we look at the problem it is going to take quite a bit of fuel to station keep for three hours due to the EVA.

CRO Roger, we understand.

S/C I think the loop for our preparation has been abbreviated.

CRO Roger.

HOU Carnarvon, Houston Flight.

CRO Go ahead, Flight.

HOU Tell him to go ahead with the eat period and try to minimize the fuel consumption. We are looking at the profile now, to see what we can do.

CRO Gemini 9, Carnarvon, we would like for you to go ahead with your eat period and minimize your usage of fuel and we will talk to you over the states.

CRO Flight, Carnarvon.
HOU Go ahead, Carnarvon.
CRO Okay, we have completed the purge on section one,
starting on section two.
HOU Yeah, okay. Purge on section one look okay?
CRO That is affirm.
HOU Okay.

It is pretty quite over this pass over Carnarvon. There is one minute and 47 seconds remaining in this pass. Perhaps the crew again will talk to the spacecraft communicator. We will stand by and listen.

CRO The purge is completed, Flight.
HOU Roger.
CRO Gemini 9, Carnarvon.
S/C Go ahead, Carnarvon.
CRO Would you place your quantity read to ECS02?
S/C Fuel cell O2. Fuel cell H2.
CRO ...to off and we are standing by.

Spacecraft Gemini 9 and the target vehicle have just moved out of the acquisition range of the Carnarvon station. Spacecraft communicator at Carnarvon said both vehicles looked very good. At 21 hours 51 minutes and 45 seconds, this is Gemini Control.

END OF TAPE

Good Morning. This is Gemini Control.....this is.....this is Gemini Control
forgive the delay, no new contact with the crew, we're presently showing 22
hours into the flight. No new contact since Carnarvon, the spacecraft now
off the east coast of Australia. The crew is eating breakfast, they did a
good day's work before breakfast this morning performing a very involved
rendezvous from above, which was successful although Tom Stafford had a good deal
of trouble spotting the target vehicle against a sun-lit ocean. . We expect
a rather extensive briefing on our EVA plans as the spacecraft moves across
the states, these plans are under going final review at presently in a Staff
Support room here in the Control Center, and that is the only additional
activity we show on our flight plan, presently. Meanwhile the Gemini 9 is
maintaining a separation distance of approximately 100 feet from the target
vehicle in this swing across the Pacific while the crew does enjoy breakfast.
This is Gemini Control, Houston.

END OF TAPE

This is Gemini Control Houston. We were in contact with the spacecraft a few minutes over, a few minutes ago over Canton Island and the status of the pilots was asked by Neil Armstrong. Tom Stafford gave us a summary that went something like this "we're pretty well bushed" and he also raised for the first time some question in his own mind, having talked it over he said with Gene Cernan, he questioned whether, and when EVA should be done. It is his suggestion that perhaps the EVA event should wait till tomorrow morning, he realizes the alternatives are that where some experiments could be done, and he qualified it by saying we have a specific plan for the ATDA, suggesting the release of the shroud, and suggesting go ahead with some docking practice. We questioned the need for EVA, as presently planned for 25 hours and 10 minutes. There has been considerable work done during the night on a plan for EVA which will be discussed at length over the states in some 10 to 12 minutes from now. Meanwhile the Surgeon reports that the crew got approximately 8 hours sleep last night, it was described as dozing sleep, not at all solid. They both sound a little tired this morning. They have been working hard to carry out this rendezvous from above. The crew has also had total of 110 ounces of water we can't break that down per man but we would guess it would divide approximately. We have this brief tape conversation with the Canton Island station, we'll play it for you now.

MC Canton go remote.

CTN Canton remote.

MC Go remote.

S/ C Roger.

HOU Gemini 9 this is Houston.

~/C Roger, Houston read you.

 Houston, Gemini 9.

HOU Roger we're reading you load with a little

HOU garbled. Advise we'd like to look at your station
 keeping here and the/^{over}states to see what your fuel
 consumption down,/^{is}I 'd like to have evaluation of
 how you think you'll be able to do station
 keeping and EVA at the same time.

S/C Okay, we're going to talk it over, right now
 we're pretty bushed.

(garbled)

We've got I estimate 16 to 17 percent fuel remaining
and this with the experiment we have planned, and
everything else, we've talked it over and we
think it might be better for both of us to
knock it off for a while, do some experiments
and try the EVA this morning, unless you have a
specific plan to do some good with it, I don't
feel we'd gain a whole lot, over.

MC Roger. Turn I followed that. We're probably
 about 2 minutes to LOS. talking to you here at
 the station we have acquisition at 22, 23,

S/C Roger, 22, 23.

END OF TAPE

This is Gemini Control Houston at 22 hours, 26 minutes into the flight. Within the last few minutes in conversation with the crew the decision has been reached to postpone extravehicular activity until at least tomorrow. I say again, a decision has been reached to postpone the EVA activity. The crew reaction of this was a statement from Tom Stafford -- "We agree very heartily with that recommendation." Additional work is a foot however, in an attempt to shake loose the shroud still enclosing the target docking adapter ring. And this activity will go on during this pass. The spacecraft/just presently crossing the east coast of Mexico in the Gulf. The crew is standing by in order to get photographs of this operation. The plan is this -- we will activate Ring A of the ATDA, that is the reaction control system ring, which still has a full 35 pounds of fuel available in it, we will cycle the rigidizing-non-rigidizing sequence, that is move the docking adapter cone in and out and at the same time, we will pitch up and down the ATDA itself, in an attempt obviously to shake the clam shells loose, they are still being held together by at least two wire bundles, perhaps two more inside. But we know there are two connecting externally. As near as can be observed, those are the only two bundles connecting. The bolts -- stainless steel belly band -- about the outside of the adapter clam shells have been blown and are free. The status of the ATDA in addition to Ring A, and its fuel, which I have given you, the squib batteries which activate the pyro circuits, an independent battery system from the main system -- the squib battery still contains three amps or 20% of the power. The main battery system still has 621 amps, this is approximately 60% of the power remaining since take off. Commands are

going up to the ATDA at this time. The command to the -- the primary execute command to the ATDA has been sent, and a signal verifying receipt has been received. The Ring A squib buss has been on. We don't have an exact position on where Gemini 9 is, we would estimate it is 100 to 150 feet from the ATDA. Additional commands going up to the Agena. Stafford has come in several times to report that the same rates that he has observed still obtained with the ATDA. But this is understandable, because I don't think the pitching motion has been introduced as yet. Now the RCS Ring A has been activated and Stafford confirms visually that this stopped the rates abruptly. The slight roll rate which the ATDA had been maintaining. He says the rates have been pretty well damped. Stafford says the ATDA is rolling to the left about two degrees per second. The expectation is this series of maneuvers, which will continue out to into the middle of the Atlantic Ocean, may very well deplete the fuel supply in Ring A, but the feeling is, that it will be well worth the effort. We are now preparing to send the rigidized-unrigidized command. A rigidized command has been sent and a message of acceptance has been received. And Tom says, they're really tossing the ^{thruster} fuel out now, while this rigidizing-unrigidizing sequence goes on. The thruster fuel of course, coming from the target vehicle. All the while, Stafford and Cernan are taking pictures of this activity. It should be a remarkable photographic record. We're going to the unrigidized sequence. Tom Stafford reports he's already expended one can of film. He wants to reload. We have unrigidized the cone, the signal has gone up -- an acceptance signal has come back. The Flight Director has ordered that we return the ATDA to a low rate load. Tom Stafford has remarked several times of the unusual thruster activity he's observing. Stafford estimates his present onboard propellant

quantity reading is 12 to 13%. He says the target vehicle thrusters are still firing very rapidly and he has asked the flight director and should he maintain a station keeping position with the target vehicle for another rev that decision has been postponed for about 10 minutes, until we are within the Canary area of acquisition. We have lost telemetry contact with the target vehicle right now which is out some 500-800 miles east of Bermuda. The preliminary indication is that this series of maneuvers introduced across the states apparently was without effect. We've heard nothing from the crew. Our TM shows also that we did not have much success. The clam shells apparently are still around the docking cone. To recap this rather extraordinary active pass -- a decision was reached and passed to the crew at the beginning of the pass that any EVA considerations on the EVA which had been scheduled for about 25 hours and 10 minutes into the flight would be postponed until at least tomorrow morning. The one possible fact that could have changed that decision would have been the success of jettisoning these panels, shaking them loose somehow. And, in an attempt to to that a series of bucking pitching up and down motions were introduced into the ATDA by going to Ring A and at the same time, several rigidizing and unrigidizing commands were sent to the docking cone, Apparently, without success. We are now prepared to play the tape as we moved across the states, the communicator from the spacecraft is Tom Stafford. You will also hear some discussion from our Agena console operator and I believe Gene Kranz the flight director, also gets on the loop from time to time. Here's that tape.

END OF TAPE

Guaymas go remote

HOU Gemini 9, Houston

S/C Gemini 9 Houston, GO

HOU Roger. Its the ground recommendation that ^{we} postpone
the EVA activity till the third day. Would you
agree with that?

S/C We recommend very heartily with that recommendation.

HOU Roger, good. The next thing we'd like to do is
fire up the ATDA A-ring during this stateside pass
and cycle the rates and the cone and would you be in
a position to observe and photograph that activity?

S/C Roger. We'll hit it on this stateside pass and I'm
into the sunrise right now and the cameras all set up
and we're able to follow the whole works.

HOU All right. We'd like to have word from you when you
think the lighting will be satisfactory and your in
a good position to begin that activity.

S/C Okay.

CYI Canary Cap Com AFD.

HOU This is AFD Canary go ahead.

CYI If you follow, we're going to do that sequence and
then we'll - also going to do sequence 4 and 3.

HOU Roger, copy. Your going to - okay we've got it.
Rigidize and unrigidize.

CYI Roger. Here we go. Just like Gang Busters.

HOU Okay, very good.

CYI We'll keep you briefed.

HOU Roger, Roger.

S/C Houston, this is Gemini niner.

HOU Roger, go ahead.

S/C Were you able to find out Neil whether theres
 anything we could do EVA to the ATDA that might
 afford us a docking?

HOU We've looked into it rather extensively and we had
 some possible actions. However, we did not have a
 very high confidence level in those actions.

S/C Now, Tom and I discussed this whole thing and I
 guess the real - the little real-time evaluation
 of what we've done in the past 20 hours or so and
 what we've got to do leads us to believe probably
 that the third day EVA might be better.

HOU Roger, we're in agreement with that at this point.
 We're continuing the flight planning activity in
 that direction.

S/C Be better.

HOU Texas go remote.
 Guaymas go local

TEX Texas remote

GYM Guaymas local

HOU Nine we're over about the middle of the Texas pass
 now, we're standing by for your recommendation.

S/C We're set to go to photograph. Go ahead and turn on
 the RCS when you want.

HOU Okay, we'll let you know as we do each action here.
 Nine, Houston standing by here, we're waiting for
 telemetry from the ATDA. We should have it squared
 away in a second.

S/C Roger.

HOU Select in RCSA now.

S/C Roger. We're taking pictures. (garbled) same drift
 rates.

HOU Okay. He hasn't sent, he's going through warmup now.
 Thirty seconds ago.
 Okay theres secondary TSS. Execute.

S/C jar at the same rates Neil.

HOU Okay. We're still about a few seconds away I guess.
 Hope we don't run you out of film. RCS power on.

S/C Oh, yea, that stopped it right away. Tight as a rock.

HOU (garbled)as a rock.

S/C Hold the time. Now it's stopped.

HOU Roger.

S/C Looks like its pretty well damped.

HOU Roger

S/C Right away it starts drifting now. You turn it on
 and off, now its started to roll to the left. I'd
 estimate about two degrees per second maybe three.

HOU Roger.

S/C Give us a mark when you turn it on.

HOU Okay.
 Okay, going to high rate.

HOU There's low rate.

S/C I didn't see it fire there at all.

HOU Okay.

S/C Still at low rate Neil.

HOU Okay. High rate. Mark.

S/C There it goes. It's really kicking out the RCS fuel.

HOU Roger. Okay we're going to cycle the nose cone now.

S/C Okay. Let us know when you cycle it, Neil.

HOU OK, we're coming up on rigidize.

S/C The thrusters are still continuing to fire quite full. It's just about regular reentry Neil.

HOU Okay. Rigidize.

S/C Boy, their really tossing the thruster fuel out now. Those thrusters are firing just about (garbled) a pretty good duty cycle.

HOU We're with you.

S/C They are still firing.

HOU Okay, we're going to unrigidize now.

S/C Standby to reload the film.

HOU OK.

S/C Go ahead. Hold off we're right in the sun now.

HOU OK, we're going to loose a carrier here pretty soon.

HOU Bermuda go remote.

HOU Bermuda go remote.

BDA Bermuda remote.

S/C Okay, go ahead now.

HOU OK.

S/C Look at those thrusters. Those thrusters are really going through a rapid duty cycle. At least a 50 - 50.

HOU Going to low rate now.

S/C You should be on RCS fuel before long.

HOU Okay, we're getting TM dropout now.

S/C Do you want to set us up for a separation maneuver from it?

HOU Standby.

S/C Do you want us to station keep for another rev? I've got about 12 percent fuel.

HOU Ok, we're going to be at Canary in a few minutes. We'll give you that dope there. What is your propellant quantity now?

S/C Roger. Twelve percent (12%). Twelve or thirteen percent.

HOU Ok, Tom.

S/C Man those RCS thrusters are still firing real rapidly.

HOU OK. We lost TM but we're going ahead and send an RCS off.

S/C Roger.

HOU Tell us if you see it stop firing.

S/C It stopped.

HOU OK.

Are you following Canary?

CYI Roger. RCS is off.

HOU Roger.

HOU Canary Cap Com AFD

CYI Go, AFD

HOU Ok, we'd like acq LOS main from Gemini and we'll get you the ATDA stuff as soon as we can get it squared away.

CYI Roger.

HOU Okay, we're approaching LOS at Bermuda, Tom.
Canary will pick you up in three or four minutes.

S/C Roger.

(Pause)

This is Gemini Control Houston. Over the Canary's the crew was advised to perform a three foot per second retro-burn. And, please advise us of the time of the burn. They have not yet completed the burn. When given that instruction, Stafford said "we're about three feet away from the monster and we're taking some more pictures." The crew is also advised when performing this three foot per second retro-burn to please bring up the L-band radar on the ATDA and give it a little service check as they move away from the beast. The source pressure on ring-A in the ATDA (the target docking adapter), is running at 2100, which is a good solid value. Stafford also advised that they had aboard plenty of documentary evidence of what precisely caused this failure. He did not elaborate on that remark. Our best estimate is that approximately 50 pounds of useable propellant remain on Gemini 9. This is somewhat less than the flight plan showed. We should have at this point in time just a few pounds less, but its probably enough to carry off an extravehicular activity tomorrow. We have now the tape conversation with the Canary Station and we'll play

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 6:21 a.m.

TAPE 92, PAGE 7

it for you at this time.

END OF TAPE.

HOU FLT Canary Cape Com, Houston Flight

CYI Go ahead, Flight. We have TM solid.

HOU FLT Ok, why don't you advise the crew to do a three foot
per second retrograde burn at their convenience and
advise us of the time at which they started their
burn.

CYI Roger. Three foot per second retrograde at their
convenience and give us the time.

HOU FLT Roger

CYI All system are go, Flight.

CYI Gemini 9, Canary Cap Com

S/C Roger, Canary. We are about three feet away from
the monster taking some pictures, go ahead.

CYI Ok, we would like for you to do a three feet per
second retrograde maneuver at your convenience
and give us the time.

S/C Roger, we are still snapping pictures.

CYI Ok, we are standing by. All systems look good.

S/C one we are taking a picture of.

CYI Flight, Canary. The RCS source pressure on the target
vehicle TB 16 is holding steady at 2100.

HOU FLT Roger.

 Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU FLT We use send Channel 22 SEP to the ATDA and then go
through Sequence 19 Alpha to turn the L-Band beacon
on.

CYI Twenty-two set. What is that function, flight?

HOU FLT L-band enable.

CYI L-band enable within sequence 19 Alpha, Roger.

HOU FLT You can tell the crew we are turning the L-band on for their separation.

CYI Roger.

S/C Canary, this is 9. We have fully documentary evidence on what caused the failure.

CYI Say again, 9.

S/C Ah roger, we are going to have plenty of documentary evidence as to what caused the failure.

CYI Roger, 9. We are in the process right now of turning the L-band on for you.

S/C Good.

HOU FLT Ok, and you can advise them to conserve the fuel from here on out. We'll update them further in the flight plan.

CYI Roger.

Gemini 9, we would like for you to conserve as much fuel as you can from here on out and we'll update you later on the flight plan.

S/C Ok. We are slowly drifting away from it and after we get squared away and finish our picture I won't use anymore fuel. We'll go ahead and do the three foot per second retrograde.

CYI Roger, Copy.

We've completed those commands, Flight.

HOU FLT Ok, fine.

CYI Houston Flight, Canary. We've got two minutes to
LOS. Do you want this burn done before LOS?

HOU FLT If it is convenient for him. Just so we get the
time, you advised him of that?

CYI That's affirmative.

Canaries has LOS, both vehicles. All systems Go.

HOU FLT Roger, Canaries

END OF TAPE

This is Gemini Control Houston. 22 hours, 58 minutes into the flight. Three to four minutes from now over the Tananarive station we now estimate that Stafford and Cernan will perform the three foot per second retrograde burn, and this burn will have the effect of lowering the Gemini perigee about one and a half miles and will place the spacecraft about eight and a half miles ahead of the target vehicle. It will gradually move away from the target vehicle at the rate of some eight to eight and a half miles per rev. It is a distinct possibility that this is the last time that the target vehicle will be seen in view of the low fuel budget. We have this brief tape conversation between the crew and remoted through the Kano station. We'll play it for you now.

HOU Gemini 9, Houston standing by.

S/C Roger. We're getting squared away for our three foot per second retrograde burn. We've still got it in sight. Exposed a lot of film, and we'll...all over Carnarvon or Tananarive.

HOU Roger. We're standing by. All I need is the time and the velocity of the burn.

S/C Roger.

END OF TAPE

This is Gemini Control Houston. At 23 hours, seven minutes into the flight. A very few minutes ago, White Team capsule communicator Dick Gordon tagged up with the Gemini 9 crew via Tananarive and we were advised that the crew had performed the three foot per second separation maneuver that they'd been instructed to do some 20 minutes ago. This maneuver carries them one and a half miles below the target vehicle, that's one and a half nautical miles in perigee at least, and moves them out in front of the target vehicle some eight to eight and a half miles. The crew also was instructed that we want to perform a rather extensive accelerometer bias check on the next sweep across the United States. The tape from Tananarive has a lot of noise on it this morning but we'll play it for you at this time.

Tananarive go remote.

TAN

Tananarive remote.

S/C

..... this is Gemini 9.

HOU

Gemini 9, Houston standing by.

S/C

Roger. Gemini 9. We've just completed the three foot per second burn.....22 59 00.

HOU

Gemini 9, Houston. Did you say again the time please.

S/C

Roger. 22:59:00.

HOU

Gemini 9, Houston. Copy the separation maneuver at 22:59:00. Is that affirmative?

S/C

That is affirmative.

HOU

Roger. Was that a three foot per second retrograde?

S/C

Say again.

HOU Roger.

S/Cto say again.

HOU Gemini 9, Houston. I understand it was a three foot per second retrograde burn. Is that affirmative?

S/C That is affirmative.

HOU Roger, Tom. Anticipate when we come across the states on the next pass that we'll do an accelerometer bias check all the way across the states. We want to take a good look at it. So you can prepare for it even before you get there and let it run all the way across.

S/C Roger, will do. From here to our pass..... rendezvous for 24 hour period to push the work load.

HOU Gemini 9, Houston. We're having a little trouble reading you. Would you say again, please?

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control Houston, 23 hours, 54 minutes into the flight. Since we last had a report, we've had contact via Carnarvon. Stafford confirmed which thrusters he'd use to make his separation maneuver. He also reports that the spacecraft radar is on but the ATDA radar is - I'm sorry the reverse of that. The spacecraft radar is not on but the ATDA radar is. The transponder on top of the ATDA is on. During the course of the flight, as perhaps to underscore some earlier comments from Stafford, the people on the ground noticed that Tom appeared to fall asleep during the course of the pass. The general plan is now to run silent as Gene Kranz has put it, for the next several revs to give the crew a chance to rest. We will however go ahead and perform an accelerometer bias check over the states during the upcoming pass. For the next several revs it looks very quite. In about two and a half hours we expect to start the first of three UHF-VHF polarization experiments. These at Hawaii and possibly Antigua. Here now is the tape conversation recorded over Carnarvon.

CRO Standing by at Carnarvon

S/C Roger.

CRO Carnarvon has telemetry showing on both vehicles.
Gemini 9 Carnarvon Cap Com, we're still standing by

S/C Roger Carnarvon. We're just getting squared
away here in the cockpit.

CRO Roger.

S/C Had accelerometer bias check across the states and
computers all set up.

CRO Okay.

S/C Check on the thrusters.

CRO Standby.

On that three foot per second burn which thruster
did you use?

S/C Roger. We used the forward firing, number 11 and 12.

CRO Roger. We copy.

Flight, Carnarvon

HOU Go ahead Carnarvon.

CRO Okay, the spacecraft radar is not on however, the
ATDA is. Do you want to go ahead and turn it off
or do you want to leave it like it is?

HOU Lets leave it on during this pass here until we
confirm that we got positive separation. We'll
probably turn it off over the states.

CRO Roger.

HOU You missed all the excitement yesterday Bill.

CRO How's that?

HOU All these good re-rendezvous.

CRO We just did all that here in the last four hours.

HOU Is that right.

CRO I guess you were sleeping.

HOU You know we may leave you out there permanently.

CRO I'm getting an accent.

HOU How's your team out there?
CRO Doing great.
CRO Carnarvon has C-band track.
HOU Roger. Thank you.
CRO Everything looks good flight.
HOU Roger, Carnarvon. Everything looks good here.
CRO Flight, Carnarvon
HOU Go ahead.
CRO Looks like the pilot might be going to sleep.
HOU Okay, thats outstanding.
CRO Roger.
Carnarvon has one minute until LOS.
HOU Roger.
CRO Carnarvon has LOS on both vehicles.
HOU Roger, Bill.

This is Gemini Control Houston. While that tape was playing the spacecraft came in contact with the west coast of the United States and this conversation has ensued.

HOU Guaymas go remote
GYM Guaymas remote.
HOU Gemini 9, Houston.
S/C Houston, Gemini 9
HOU Roger 9. We're standing by for your accelerometer check all the way across.
S/C Roger. Have address 25, 26, and 27 all zeroes.

S/C Pushing start comp.

HOU Roger. Just let it go no thrusting and we'll watch it. I have a flight plan update for you.

S/C Roger.

HOU Roger. Node ascending node rev 15 158.6 west, and your flight plan update for the next couple of revs, we're going to give you an eat period starting right now at your convenience. Give you a couple of revs of rest and we'll pick you up about the beginning of - at the end of rev 17 beginning of rev 18 over the states again.

S/C Roger. That sounds good. What time will that be?

HOU Roger, we'll pick you up at Hawaii time at the end of rev 17 is 26:52 it will be approximately 27:10, 27:15.,

S/C Sounds real good. We're going to get a little snooze here and eats for awhile.

HOU OK, while we're watching this bias check, we'd also like to brief you on a cross feed. We want to go ahead and open the cross feed now. What this will do for us, if we open it now and balance those tanks we can close the cross feed at the beginning of EVA in the morning and we will not have to open it up again. So if we do it now, we'll be all set for the rest of the flight.

S/C Roger. Do you want to go ahead and open it at this time.

HOU Well I'll just go ahead and read the procedures
to you. Quantity read switch to fuel cell O2.

S/C Roger. Fuel cell O2.

HOU Okay, Agena control bus arm switch to experiments
position.

S/C Roger, bus arm to experiments.

HOU Roger, cross feed switch open.

S/C Roger, cross feed switch coming open, and we heard
the thud.

HOU Okay. I understand the pyro fired, Agena control
bus arm switch safe.

S/C Positioned.

HOU Ok, fuel cell O2 heater off.

S/C Fuel cell O2 heater off.

HOU Quantity reads switch to ECSO2 for 20 seconds.

S/C Roger, ECSO2.

HOU Nine, Houston. Quantity read switch, fuel cell H2.

S/C Fuel cell H2.

HOU Roger and you can leave it there for 20 seconds and
then off.

S/C H2 coming off.

HOU Roger. Cryogauging switch to off.

S/C Roger.

HOU Tom, thats all I have right now for you and we just
watched you going across. You can relax for awhile.

S/C All the facts are gone on that last rendezvous:
I think we've learned a whole lot about rendezvous
from those last two and also from the first
ones.

HOU Yes, I think we all did on those.

S/C Yea that was quite a chore. I appreciated that last
one. Everything was going real good and then...
but we came out okay on it.

HOU Okay real fine. Real glad that it happened that
way.

S/C But, you talk about being busy as a left handed paper
hanger trying to go optically and also RFR. That
was quite a chore.

HOU Hell, thats nothing new, is it.

S/C No its just like flying the old GCA.

HOU Well it looked like a pretty good show from down here.

S/C Thank you. We used our backup initiate and which
was real close to what the grounds was. The closed
loop was off, we could see this(garbled)

HOU Understand.

S/C This being the closed loop would've thrown us in the
wrong way but our delta delta R showed us exactly
what we had and the grounds switching was good and so
was our onboard backup. We went with that, we kept
it closed loop and we used a modified first mid-course
and then we took the backup . The closed loop for the

S/C final mid-course and this switching was exactly on with ours.

HOU Fine. Sounds good. At least we know how to do them now, don't we.

S/C Yes.

HOU Nine, Houston.

S/C Go ahead.

HOU Tom, just an overall look here. What we're looking at for this afternoon and after you have a couple of revs of rest, is picking up some of the experiments. The D-14's and S-11's. We can update those later for you. We'll update them in real-time for you to do them after your rest period. We're trying to get the EVA tomorrow morning as late as possible and still maintaining stateside coverage so we can give you a good 10 hour rest period tonight before EVA prep.

S/C Roger. That sounds real good. Can you give us a good accurate hack on our propellant quantity from the ground readout. I'm showing about 11 percent here.

HOU Standby. You have approximately 50 pounds of fuel remaining.

S/C Rog.

HOU Read out electrical.

S/C Electrical read out.

HOU Did you get the counts on that quantity readout.

S/C CAO9?

HOU That is correct.

S/C Roger.

Do you want them now?

HOU Please.

S/C Okay

This is Gemini Control. That probably wraps up the conversation for the state-side pass although the spacecraft is only now over the east coast of the United States. But we do expect them to go ahead with the plan to maintain relative radio silence for the next couple of hour to give the crew a chance to cap-nat. The latest onboard propellant quantity reading for fuel is an estimate of 50 pounds and according to the best indications we have now, this is enough to go ahead with the fairly limited experiment program for the day to complete the EVA sometime tomorrow morning, and continue through the planned 70 to 71 hour flight. At 24 hours seven minutes into the flight this is Gemini Control Houston.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 8:20 AM TAPE 98 PAGE 1

This is Gemini Control at 24 hours and 40 minutes into the flight. Gemini 9 now in its 16th revolution, is passing over the Tananarive tracking station. We have no voice communication with the spacecraft and we do not intend to raise the spacecraft at this time. Nor at the Carnarvon station which will be next. The ATDA target is on its 45 revolution and it is estimated that it will have a life time orbit of 31 days. Norad reports the Titan II second stage re-entered over the western Atlantic off the coast of South America about 4:26 AM CST today. Our crew is now in an eat and rest period that is expected to last for the next two revs or approximately three hours. When this period is over, they will conduct the D-14 UHF-VHF polarization experiment, designed to measure the electron content of the ionosphere below the spacecraft. Our last contact with the crew came over the states on rev 14. It was very short and we will play back that tape now.

S/C We will leave the platform on.

HOU Roger, understand. Tell Geno I am sorry about his Cubs last night, but we will try again tonight.

S/C Well, you know how the Cubs are. I will be a winner tomorrow, no matter how you look at it, Dick.

HOU I am sure you will.

S/C Yeah, try a little harder. I lost two out of two yesterday.

HOU Say again.

S/C The Astros and the Cubs.

HOU Well, I lost one of them with you, so that is pretty close. Chris said the Yankees won.

S/C Say again.

HOU The Yankees won yesterday.

S/C Thanks a lot. Who are they?

HOU You not only got the wrong teams, you got the wrong league.

S/C Yankee who?

HOU Good night.

AFD Canary, AFD.

Canary Cap Com, AFD.

CYI AFD, Canary, go ahead.

AFD Okay, I have an MI coming. TIF for OBC summary..
Forget that we just turned the computer off .

CYI Okay, will do.

AFD And we want you to remain completely silent during the pass..

CYI Roger.

AFD Turn your speaker off.

CYI I can't find the damn thing. I can't find the dial or I would.

END OF TAPE

This is Gemini Control Houston at 24 hours, 51 minutes into the mission. Within the last few minutes a major flight plan meeting has concluded here in the Mission Control Center, with the following results. For the benefit of newsmen we think we should pause a moment or two - I think you would want to take notes on some of these times that I am going to read to you. We are going to cover the activities through approximately the next 24 hours, up to about noon tomorrow. Now we'll give you the times in elapsed time of the mission, also in Central Standard Time. The first time reference will be in Ground Elapsed Time, the second in Central Standard Time. The first item, a rest period will continue until 27 hours Elapsed Time. or 10:40 a.m. Central Standard Time. A D-14 Experiment is to be performed at GET of 27 hours, 20 minutes, or 11:00 a.m. Central Standard Time. A S-11 Experiment is programmed for an Elapsed Time of 27 hours and 45 minutes to 28 hours and 25 minutes, or in Central Standard Time, from 11:25 to 12:05. A D-14 Experiment is planned at 28 hours and 30 minutes, or 12:10 Central Standard Time. Another S-11 is scheduled at 29 hours, 15 minutes to 29 hours, 25 minutes, Central Standard Time would be 12:55 to 1:35 p.m. A D-14 Experiment is scheduled at 30 hours elapsed time, that's 1:40 Central Standard Time. An S-11 Experiment at 30 hours, 45 minutes to 31 hours 25 minutes, and in Central Standard Time that 2:25 to 3:05 p.m. D-14 Experiment scheduled at 31 hours, 40 minutes, which is 3:20 p.m. Central Standard Time. Another D-14 at 33 hours, 20 minutes, Elapsed Time, which will be 5 p.m. Houston Time. An eat period is scheduled at 33 hours, 30 minutes to 34 hours and 30 minutes which will be 5:10 to 6:10 p.m. Central Standard Time. The evening sleep period is planned to begin at 34 hours and 30 minutes and last for 10 hours to 44 hours and 30 minutes into the mission, or in Houston time from 6:10 p.m. until 4:10 a.m. tomorrow morning. An eat period to follow the sleep period is scheduled

44 hours and 30 minutes to 45 hours and 30 minutes and this will be in Houston time from 4:10 til 5:10 a.m. EVA preparations are scheduled to begin at 45 hours and 30 minutes Elapsed Time and extend until 49 hours and 30 minutes Elapsed Time, converted to Houston Time that will be 5:10 a.m. to 9:10 a.m. Our present plan is to open the hatch at 49 hours and 30 minutes into the flight, this would be toward the end of revolution 31, just off the West Coast of the United States, and the time on that would be 9:10 a.m. Now an additional factor in the planning - if for some reason the preparation goes a little bit slower than usual, or if the unforeseen occurs, and the crew needs additional time, before they open the hatch and begin their Extravehicular Activity, we can easily slip one revolution and still maintain full stateside range tracking during the EVA exercises. Once again, open the hatch - planned ground Elapsed Time, 49 hours 30 minutes toward the end of revolution 31. The ingress - when Cernan will reenter the spacecraft, is presently ticketed for 52 hours elapsed time. This will be in rev 33, we do not have a ground corresponding point available just right now, but we will later. Elapsed time of 52 hours in rev 33, the Houston Time of that event will be 11:40 a.m. This is Gemini Control Houston.

END OF TAPE

GEMINI 9a(2) MISSION COMMENTARY, 6/4/66, 8:50 AM TAPE 100 PAGE 1

This is Gemini Control at 25 hours 10 minutes into our flight. Gemini 9 is now passing beyond the Australian continent and moving up toward the Canton Island tracking station. It is on its 16th revolution. Our Flight Director, Gene Kranz, in this quiet period here where we are not raising the spacecraft and allowing the crew to rest presented Bill Garvan, our Carnarvon Cap Com, with a little bit of a surprise informing him that in the unlikely event that the Houston Mission Control center should have a difficulty and be forced to drop out of the direction of this flight, during the EVA, he informed Bill Garvan that Carnarvon or Hawaii would then have to take over as Flight Director. And went over with Garvan the things that he would expect Garvan to communicate to the crew and also relay back here to Houston. Now the Mission Control Center in Houston is backed up to avoid such a difficulty in many ways. However, Flight Director Gene Kranz, is attempting to cover all phases and this is a little bit of forward thinking. It was a surprise to Bill Garvan and I am sure it will be a surprise to the Hawaii spacecraft communicator as well. This is Gemini Control. We are 25 hours 12 minutes into our flight.

END OF TAPE

This is Gemini Control at 25 hours and 40 minutes into the flight. Gemini 9 is now passing over the stateside tracking stations ending its fifteenth revolution, rather, it should be beginning its sixteenth very shortly. We have no - we have had no communication for the past hour with the crew. Our target is now trailing the spacecraft by approximately 18 miles. It's orbit is about one and one half miles above that of the spacecraft. According to our Flight Surgeon, Dr. Berry, the crew is asleep and appears to be rather soundly asleep at this time. There are no plans to communicate with the crew for approximately another one and one half to two hours. This is Gemini Control, 25 hours, 41 minutes into the flight.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66 9:40 AM TAPE 102 PAGE 1

This is Gemini Control 26 hours and one minute into the flight. Our spacecraft is now in its 16th revolution and is about one and one half miles below the target and is trailing by some - the target is trailing by some 20 miles. We have had no voice communications with the spacecraft for the past hour and one half. The spacecraft orbit is 157.9 by 161.0. 157.9 nautical miles by 161 nautical miles. The target's orbit is 161.1 by 159.3. The information we have from our flight surgeon is that the crew is asleep and appears to be in a rather sound sleep. The spacecraft is now passing over the Ascension Island tracking station and we have some quantities to give you concerning the ECS oxygen and fuel cell oxygen, the total remaining aboard the spacecraft combined total 67 percent. Fuel cell hydrogen 37.6 percent. Our flight director estimates that there is enough fuel aboard the spacecraft to complete the Gemini 9 mission. This is Gemini Control. We will be in a rest period for the crew for approximately another one hour and one half. Following the rest period the crew will take part in the S-11 and D-14 experiments. This is Gemini Control 26 hours and three minutes into the flight.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 9:50 A. M.

Tape 103, Page 1

This is Gemini Control at 26 hours and 10 minutes into the flight. Gemini 9 is now in its seventeenth revolution and passing over the southern part of Africa. The spacecraft is approximately one and one half miles below the target vehicle. The target vehicle is trailing by some twenty miles. Here in the Mission Control Center, activity is at a very low pitch. Our Flight Controllers are preparing for the burst of activity that will follow this rest period which will extend for approximately another hour and 15 to 30 minutes. And the rest period, of course, will be followed by activities connected with the S-11 and the D-14 experiments. And so at this time, our Flight Controllers are making their preparations to take part in those maneuvers. Our Flight Surgeon reports to us that the crew is asleep and appear to be sleeping rather soundly. This is Gemini Control, 26 hours and 11 minutes into the flight.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 10:20 AM, TAPE 104 PAGE 1

This is Mission Control at 26 hours and 40 minutes into our flight. Gemini 9 has just passed beyond voice range of the Carnarvon tracking station. At that time our spacecraft communicator did raise the spacecraft crew and talk to Gene Cernan. He gave Cernan some updated times for the D-14 experiment, which will take place at 27:20 over Hawaii. That will be at approximately 10:40 CST. The D-14 experiment, to do this crew turns a switch on in the spacecraft. This extends an antenna, which sends a standard radio frequency to the ground station at Hawaii. Stafford will hold the spacecraft steady during the pass and the ground stations pick up the radio frequency signal emitted by the spacecraft and on the ground they measure the electron contents of the ionosphere below the spacecraft by measuring the Faraday rotation of electromagnetic transmissions from the spacecraft. At this time, we will play back the tape voice communication between Carnarvon and Gemini 9.

CRO Flight Carnarvon

HOU Go Carnarvon

CRO Both astronauts appear to be sleeping. Shall we
wake them up now.

HOU That is affirmative. Go ahead.

CRO Roger.

CRO Gemini 9, Carnarvon Cap Com.
Gemini 9, Carnarvon Cap Com.

HOU Stand by, they probably have their head sets on.

S/C This is Gemini 9, go.

CRO Okay, stand by to copy your flight plan update.

GEMINI 9A MISSION COMMENTARY, 6/4/66, 10:20 AM, TAPE 104 PAGE 2

S/C Okay, give me a minute. Roger. Okay

Carnarvon, fire away.

CRO Roger, the title is D-14, that is Delta 14 926
5234, mode number Alpha Romeo, remarks: extend
antenna. The second item D-14, time 27:16:33
mode number Alpha Romeo, the third item D-14
time 28:28:25. That is all.

S/C Okay, we got three D-14's. One at 26:52:34
Alpha Romeo, 26:16:33 Alpha Romeo, ...

CRO Negative.

S/C 29:28:25 Alpha Lema.

CRO Negative.

The third D-14 is 28:28:25 Alpha Lema.

S/C Roger, got down, 28:28:25 Alpha Lema.

CRO The second one is 27:16:33.

S/C Okay, Gemini 9 calling Cap Com.

Go ahead Carnarvon.

CRO That second D-14 is 27:16:33.

S/C Roger, I got it, 27:16:33.

CRO Roger, Alpha Romeo.

S/C Got it.

Thanks for the rest. It sure helped.

CRO You're welcome.

GEMINI 9A MISSION COMMENTARY, 6/4/66, 10:20 AM, TAPE 104 PAGE 3

CRO Gemini 9 Carnarvon we are one minute LOS.

S/C Roger, Carnarvon, we are aligning the platform
so we can get the ...

CRO Roger.

HOU Carnarvon, can we have an LOS main, please?

CRO Roger.

Carnarvon has LOS on Gemini vehicle.

HOU Roger.

CRO LOS on ATDA.

HOU Well done out there.

That was taped voice communications between Carnarvon and Gemini 9.

The capsule communicator Carnarvon was William Brizzolara

and this was Williams' first time to communicate with an American
astronaut or any other kind of astronaut. This was his first attempt
and he did a very good job. This is Gemini Control. Our spacecraft
has now moved beyond the tracking range of Carnarvon and we are 26
hours 45 minutes into the mission.

END OF TAPE

This is Gemini Control , 27 hours into our flight. Gemini 9 is passing over the Hawaiian tracking station. We have established communications with the crew. Tom Stafford reported to us that he is in the midst of his D-14 UHF,VHF polarization experiment. In this experiment the flight crew merely turns a switch in the spacecraft. This switch extends an antenna which sends a standard radio frequency to the ground receiving station at Hawaii. Stafford then holds the spacecraft steady during the pass and the ground stations pickup the signal and measure the electron content of the ionosphere below the spacecraft by measuring what is termed the Faraday rotation of electromagnetic transmissions that are emitted from the spacecraft. Gemini 9 is now on its 17th revolution over the earth and very shortly will begin its 18th revolution. This is Gemini Control and at this time we will play back for you the taped voice communication between Hawaii and Gemini 9.

HAW Gemini 9, Hawaii. All systems are go on the ground. Standing by.

S/C Roger. We're in the middle of D-14.

HAW Roger.

S/C Hawaii, Gemini 9.

HAW Go ahead.

S/C Where I go to fuel cell H2 quantity, I get zero.

HAW Standby.

Okay. We're getting the ~~same~~ readout on the ground but our pressure reading is 250 which is normal.

S/C Understand your getting a zero quantity reading on the ground but a normal pressure reading.

HAW That's affirm.

S/C Okay. Would you keep a good look Don?

HAW Sure will. Why don't you leave it in that position until you get across the states.

S/C Okay.

HAW Flight, Hawaii

HOU Flight.

HAW Okay, we confirm its zero both the fuel cell H2 quantity both on the meter and the TCM station but we're getting a normal 250 psi on the meter. pressure.

HOU Roger.

HAW Flight, Hawaii

HOU Go ahead Hawaii

HAW Okay, our D-14 people are up and receiving good data.

HOU Roger.

END OF TAPE.

This is Gemini Control, 27 hours, five minutes into our flight. We have established voice communication through the California station with Gemini 9 and we switch now to give you that conversation live.

HOU S-11 at 29:16:27. Sequence number 01. S-11, 29:49:02. Sequence, 03. D-14, 30:04:25. Mode, Alpha Lima. S-11, 30:46:45. Sequence, 02. S-11, 31:19:20. Sequence, 03. D-14, 31:39:57. Mode, Alpha Lima. S-11, 32:17:04. Sequence, 01. S-11, 32:49:39. Sequence, 03. D-14, 33:15:34. Alpha Romeo. Over.

s/c Roger, Houston. Gemini 9. We had a bit of trouble on the first three. Would you repeat those three?

HOU Roger. S-11, 29:16:27. Sequence, 01. S-11, 29:49:02. Sequence, 03. D-14, 30:04:25. Alpha Lima. Over.

s/c Okay, we got them all Houston.

HOU Roger.

s/c And the fuel cells up here are looking real good. No indication other than the quantity percent.

HOU Roger, understand. The quantity - the pressures are looking good down here. We'll catch this over Texas in a few seconds.

..... Guaymas remote, California local
GYM Guaymas remote.
CAL Cal local.
..... Readout, electrical.
..... Electrical readout.
... Would you please read out CA 09 for me.
... Roger, stand by. Electrical readout.
... Go.
... Okay. CA 09 reads 5 PCM counts.
... How many? Repeat, please.
... Five.
... Readout, would you repeat please on CA 09?
... Roger, CA 09 reads 5 PCM counts.
S/C This is Gemini 9.
HOU Gemini 9, Houston. Go.
S/C Roger, just for information, our main batteries
read in order 21 24 22 and 23 both respectively.
HOU This is Houston. Roger, copy.
... Readout, electrical.
... Electrical readout.
... How's it reading right now?
... It's the same.
HOU Gemini 9, Houston...
S/C Go, Houston.
HOU Roger. Is quantity read switch fuel cell H₂?
S/C It's fuel cell H₂ at this time.

HOU Roger. Calibrate number one for 30 seconds.
S/C Calibrate number one for 30 seconds. Mark.
HOU Roger.
... Electrical readout?
... Roger. It's gone up 68.
... 68?
... 68, roger.
... 67.
... Texas remote, Guaymas local.
TEX Texas remote.
GYM Guaymas local.
S/C Mark 30 seconds.
HOU Roger. Calibrate number two, 30 seconds.
... Electrical readout.
... Go readout.
... It's back down to five.
S/C Mark it.
HOU Roger.
... Electrical readout.
... Go. It reads 96. 153 192 Steady on 192.
S/C Mark it, 30 seconds.
HOU Roger, understand. 30 second mark.
... Readout, electrical.
... Electrical readout.
... Electrical readout read 108.
S/C Houston, let us know when we can have our computer

back. Got a D-14 coming up.

HOU Roger, leave it at pre-launch. We're sending the accelerometer bias at this time.

S/C Roger.....your update.

HOU Roger, let us look at it a minute.

S/C Okay. Was that 27:16:33 a midtime for D-14?

HOU Roger. 27:16:33.

S/C Okay.

HOU Gemini 9, Houston.

S/C Go, Houston.

HOU Roger. Your accelerometer bias update looks good. You can have your computer back.

S/C Thank you.

HOU Gemini 9, Houston.

S/C Go, Houston.

HOU Roger, on your fuel cell H₂, temperatures and pressures look real good and they are steady. We suspect we may have trouble with the sensor in the tank.

S/C Okay, Dick, thanks a lot. You want us to go back an inch or two off?

HOU That's affirmative.

S/C ...the quantity reads off at this time.

HOU Roger. You might check it from time to time. I may come back in.

S/C Okay.

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 10:45 A. M

Tape 106, Page 5

This is Gemini Control. We are listening to live voice communication between Gemini 9 as it passes over the states.

...

This is CM 2, for a comp check with the ELSS heaters in operation. 1 2 3 4 5 - 5 4 3 2 1.

How do you read, over.

HOU

Roger, read you loud and clear.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 10:55 AM TAPE 107 PAGE 1

That appears to be all the communication that we will have with Gemini 9 as it makes this state-side pass. Gemini 9 is beginning its 18 revolution around the earth and as you heard the systems aboard the spacecraft looked good to our Flight Controller. They feel they may have some trouble with the sensing devices in the tank aboard the spacecraft; the fuel cells do look good, the accelerator bias check checked out very well. Stafford and Cernan have another D-14 experiment coming up at Antigua which they will reach very shortly. This again is the UHF-VHF polarization experiment and the activity of the crew is merely to turn the switch in the spacecraft, which extends an antenna and automatically a standard radio frequency is sent to the ground receiving station at Antigua. During the pass, Stafford will hold the spacecraft steady. Measurements are made from the ground. This is Gemini Control 27 hours and 17 minutes into the flight.

END OF TAPE

This is Gemini Control at 27 hours and 40 minutes into the flight. Gemini 9 is now passing over the tracking station at Ascension. We have had no voice communication recently since we left Antigua. At that time we did get a report that the ground data at Antigua on the D-14 experiment looked good. Dick Gordon our spacecraft communicator, Astronaut Dick Gordon, who is a member of the Gemini 11 Flight Crew with Pete Conrad. Gordon being our spacecraft communicator today talking to Gene Cernan in Gemini 9 was passing up some updates, time updates for start of the S-11 experiments. He gave him several of them. Cernan jokingly remarked to Gordon "I see you are looking out for your favored S-11 crew." And of course, S-11 is an experiment that is programmed for both Gemini 9 and Gemini 11. I think Gene Cernan was jokingly referring to Gordon as having loaded up most of the experiments on this Gemini 9 flight. We conducted a fuel cell purge and it went good, or it was going good at the time we heard a report from Stafford. At this time we will play back the taped voice communication between Dick Gordon and Gemini 9 as they passed over the Antigua Station.

S/C Houston, Gemini 9. The D-14 experiment being received.

HOU Standby, we received it at Hawaii, let me check.

HOU Gemini 9, Houston.

S/C Go ahead Houston.

HOU Roger 9. We can't tell you how the data is being received at Antigua until after the pass. We'll let

HOU you know though. We'll have a fuel cell purge at Ascension at approximately 27:33:00 and we'll purge section two first. Over.

S/C Roger. Understand, fuel cell purge 27:33:00 at section two first. I've been alternating these sections by the way on the purges.

HOU Roger , we understand.

S/C I see by that last experiment update you're watching out for your favorite 11 crew.

HOU Yes sir, got lots of those.

G/T LOS Grand Turk

HOU Gemini 9, Houston.

S/C Go ahead Houston.

HOU Roger, we're thirty seconds to LOS and we did get data at Antigua on D-14.

S/C You say you did get good data.

HOU Thats affirmative

S/C Good

ANT LOS Antigua

HOU Gemini 9, Houston. Standing by for your fuel cell purge.

HOU Gemini 9, Houston.

S/C Houston go.

HOU Roger Tom. How is the fuel cell purge looking?

S/C Say again.

HOU How is the fuel cell purge going?

S/C Great.

HOU Roger understand.

That was voice communication between Gemini 9 and our Control Center in Houston. We did follow the Antigua tape with the short message that we did receive as the spacecraft passed over the Ascension Tracking Station. This is Gemini Control, 27 hours, 44 minutes into the flight.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 11:40 AM TAPE 109 PAGE 1

This is Gemini Control. We are 28 hours into our flight. Gemini 9 is now on its 18th revolution and is passing over the Indian Ocean. Dr. Owen Coons, our Flight Surgeon, has told us that the command pilot got two hours of good sleep during that rest period we had earlier in the afternoon and the pilot had approximately two and one quarter hours of sleep. Both crewmen ate a meal before going to sleep. Dr. Coons feels sure that both men will get a good night's rest on their next sleep period which begins after their next meal at 31 hours ground elapsed time. The D-14 experiments which we have been conducting over Hawaii and Antigua, require Tom Stafford to power up the spacecraft and hold it steady as he passes over Hawaii and Antigua. This maneuver requires only about one pound of OAMS fuel for each pass. And since we have approximately 50 pounds onboard this is entirely adequate to complete the Gemini 9 mission without any problems from the fuel supply. This is Gemini Control 28 hours one minute into the mission.

END OF TAPE

This is Gemini Control at 28 hours and 10 minutes into the flight. Gemini 9 is passing over the Carnarvon, Australia Tracking Station range. Some of the little byplay that went on, Bill Garvin, the Spacecraft Communicator there asked Tom Stafford if he'd a chance to look at the Australian countryside. Tom said "no, we have not, we've been too busy." The spacecraft is on its 18th revolution around the earth. At this time we will play back the taped voice communication between Carnarvon and Gemini 9.

Carnarvon, AFD we're standing by

CRO Carnarvon roger.

HOU Hey Bill we got your switch. We're comparing it against our numbers and we'll let you know about the results.

CRO Ok. Remember ours are kind of ball park. We don't have all that

HOU Our stuff is being done by hand to Bill.

CRO Ok.

CRO Carnarvon has acq aid contact.

HOU Roger Carnarvon

CRO They have TM showing on both birds

HOU Roger

CRO All systems are go

CRO Gemini 9, Carnarvon Cap Com. We have nothing for you this pass. We'll be standing by.

S/C Roger Carnarvon

CRO We do have one question for you Tom.

S/C Shoot

CRO The local folks down here are wondering if you had a chance to see much of Australia?

S/C No, not really. It's been pretty much looking at other - at the ATDA on the rendezvous and its been kind of cloudy too.

CRO Roger.

S/C You had a few thunderstorms around here, we can tell that.

CRO Yea, tonight is the first time we've had rain in about nine months.

S/C We can see it lightning down there.
Say Bill, when did they get you off your favorite boat and into Australia?

CRO Well I used to put you guys to bed all the time, so now they let me wake you up.

S/C Sorry about that two week delay.

CRO Ah, its pretty rough down here.

Flight, Carnarvon

HOU Go ahead Carnarvon.

CRO Looks real good.

HOU Roger

That was taped voice communication between Bill Garvin our Spacecraft Communicator at Carnarvon and Gemini 9, Tom Stafford. The only eventful item we have coming up in the immediate future on our flight plan, as Gemini 9 comes up over Hawaii we will have another D-14

experiment. This as you may remember the flight crew will turn on a switch in the spacecraft to extend an antenna which sends a standard radio frequency to the ground receiving station at Hawaii. The purpose of the experiment is to measure the electron content of the ionosphere below the spacecraft. This is Gemini Control at 28 hours, 13 minutes into the flight.

END OF TAPE

GEMINI 9 MISSION COMMENTARY, 6/4/66, 12:20 PM TAPE 111 PAGE 1

This is Gemini Control at 28 hours and 40 minutes into our mission. Gemini 9 is now coming up state side and is within voice range of the California tracking station and we have just acquired contact. Gemini 9 is in its 18th revolution. Over Hawaii the crew performed another D-14 experiment. The D-14 experiment is the measurement of the electron content of the ionosphere below the spacecraft. This is measured on the ground by a ground station. Coming up on the flight plan we have in approximately one hour and a half - about three quarters of an hour we have an S-11 experiment. The S-11 experiment is a photographic experiment. The purpose is to photograph the night time air glow and also the sun rise twilight and any unusual night phenomena target of opportunity. With Command Pilot Tom Stafford aligning the spacecraft small end forward on the horizon using a star as a reference point, Pilot Gene Cernan will align his camera on that horizon using the same star and he will take a series of three pictures of the eastern western and southern horizons. He will use a 70 mm Maurer camera with an f .95 lens. He takes the pictures with and without filters at various exposures. The pilot also photographs the thrusters as they are firing. This star is used for reference during this experiment will be A-L-I-O-T-H, which is commonly referred to as the North Pole Star, and A-C-H-E-R-N-A-R, commonly referred to as the South Pole Star. This is Gemini Control, 28 hours 42 minutes into the mission.

END OF TAPE

This is Gemini Control at 29 hours into our flight. As the spacecraft came over the stateside on this last revolution finishing up the eighteenth revolution, we had a status report of the spacecraft systems as they read out on the ground. Our spacecraft communicator Gordon advised the Gemini 9 crew that the PCM tape recorder onboard has malfunctioned. At least, we are not able to get readouts on the ground and they advised the crew to leave it off - turn it off - until EVA. We will not attempt to get any data from it until the EVA begins tomorrow, and we will also use it for reentry. Also, they advised the crew the fuel tank quantity fuel sensor appears to be inoperable aboard the spacecraft, that is, we are getting on the ground good indications of their fuel but the sensor which tells the crew how much they have appears to be off. The ground says there is no leak in the tanks and, therefore, it must be the sensors. The fuel cells and the stacks are bearing the load well. We also passed up a flight plan update as follows: At 32:59 GET there will be a crew status report, a fuel cell purge and a cryogenic quantity readout. At 33:30 they will power down the spacecraft and begin an eat period which will last for one hour until 34:30. Following the eat period, at 34:30, they will begin the sleep period for ten hours until 44:30. The other items on our flight plan were to complete the D-14 experiment which we have gone over several times. This is the measurement of the electron content of the ionosphere below the spacecraft. And at this time the flight is proceeding normally. The spacecraft is on its nineteenth revolution, has just begun it, is passing over the northern part of South America. This is Gemini Control. We are now

29 hours, three minutes into the mission and we would like to play back the voiced communication that was made with Gemini 9 as it passed over the states.

HOU Gemini 9, Houston.

S/C Houston, Gemini 9.

HOU Roger, Tom. It looks like another good pass at Hawaii for D-14.

S/C Roger.

HOU I have a sequence change to one of your S-11's when you're ready to copy.

S/C Okay, Stand by. Go.

HOU Roger. The S-11 at 30:46:45, make that Sequence 01. Over.

S/C Roger. Got it.

HOU Okay, we've been looking at your water down here a little bit and E com tells me that we are losing a little bit of nitrogen out of the gas pressure out of the fuel cell regulation system. There is no problem. Surgeon says we can stand to drink a little more of it. We might start tapping it a little bit, if you like.

S/C Okay. We thought we were doing a pretty good job drinking it. We'll go ahead and concentrate on

HOU Okay, we'll watch you. I think, if you take a little over a long period of time, it'll be the

best way to look at it.

S/C

Roger.

HOU

And I've got a GNN status here for you if you're interested in all that. We've got down here it looks like as far as the OAMS is concerned, fuel remaining is 48 pounds, oxidizer remaining is about 78, onboard gage is about 11% and useable fuel gives us about 82 pounds. This is plenty of OAMS for attitude control for the rest of the flight plan.

S/C

Okay, real good.

HOU

On the computer. Seems to us down here that it's working normally at this time. Accelerometer bias update was good. It's almost perfect at this time. That start comp problem we had after the first rendezvous - during the first rendezvous - has not reappeared, and we think that problem might either have been in the start comp button or in the electronic latch internal to the computer.

S/C

Okay, roger. That hasn't shown up since that first day.

HOU

Okay, we do have a procedure for you when you go to load module 5. We'll play the addresses 25, 26 and 27 and we think we may be able to

correct it in case it shows up but we'll
brief you on this when we go to load module
four.

S/C Roger. Module four. I thought you said
five at first.

HOU I think I did but I meant four.

S/C Roger.

HOU Okay. All your GEMC systems look real good.
Temperatures, pressures and voltages all real
fine.

S/C Okay, Dick. You'll still kind of keep word
with us if we do any activities. We're up
full rudders in both C-Bands.

HOU Okay, understand. As far as the E com status
is concerned, PCM tape recorder has malfunctioned
in the playback mode. What we'll do with that
thing is just leave it. It looks like it's
the beginning of the tape. We'll leave it
off until just prior to EVA tomorrow morning
and hope that we might be able to get some AMU
data on it.

S/C Roger, real fine. Thank you.

HOU And your fuel cell H₂ quantity tank sensor looks
like it's gone. Everything else concerning that
looks okay. We're going to calculate hydrogen
quantity from amp hours and keep you posted

on that one.

S/C Okay. The last we saw of it, Dick, we were real good. We were way up over 80 some per cent this morning.

HOU Okay. It doesn't look to us like there is any leak. The system integrity looks good and we really think it's the sensor in that case. And, it looks like your stacks in the sections are sharing the load real well up there.

S/C Right.

HOU Okay. And cooling loops, both of them look real good and understand you are on both A pumps at this time to keep a little cool.

S/C That's affirm..

HOU Okay. That's really all we have here at this time. We'll be standing by.

S/C Roger.

... Guaymas remote. California local.

TYM Guaymas remote.

AI California local.

HOU 9, Houston.

S/C Houston go ahead.

HOU How about putting your quantity read switch to ECS O₂.

S/C H. They've been reading about 65 - 64 perhaps.

HOU Understand you're reading 64 and a half percent.
Gemini 9, Houston. Go to fuel cell O₂.

S/C Fuel cell O₂ right.

HOU Gemini 9, Houston. Go to fuel cell hydrogen.

S/C Fuel cell hydrogen.

HOU Gemini 9, Houston. Go to quantity reads off.
Everything else looks good down here.

S/C Quantity read to off. Could you give us the
latest GET hack, please.

HOU Roger. I'll give you a hack at 28:47:20.
Mark 20.

S/C Rog. We're right on.

HOU Okay. I have a flight plan update for you.

S/C Go.

... Texas remote, Guaymas local.

TEX Texas remote.

S/C Go ahead, Dick.

HOU Roger. At CSQ, 32:59:00, we will expect a
crew status report. We will have a fuel cell
purge and a cryo quantity readout again.

S/C What station is this?

HOU CSQ at 32:59:00.

S/C Roger, 32:59:00.

HOU Roger, then at 33:30:00, you will power down.
At 33:30 to 34:30 you will have an eat period
and from 34:30 to 44:30, sleep period. Over.

S/C Roger, power down at 32:59:00 and let me see here. We got all the other ones - sleep period started at 44 - 34:30 to 44:30.

HOU Roger. And that power down was at 33:30 and your crew status at CSQ was 32:59.

S/C Roger, have it.

HOU Okay.

S/C Houston, Gemini 9.

HOU 9, Houston. Go.

S/C We'd like to stay powered up for about 15 minutes after initial power down to complete the D-14. We could do a much better job with everything up.

HOU Roger, understand. The D-14 at 33:15:34.

S/C Roger.

HOU Roger, I agree with that. 9, Houston.

S/C Go ahead.

HOU Roger, Tom. We didn't have your powering down until 33:30 which is 15 minutes after your last D-14.

S/C Okay, right. We got it.

HOU Okay.

AOS Antigua.

LOS Grand Turk.

This is Gemini Control at 29 hours and 11 minutes and since that stateside pass which we've taped and played back for you, we have some

further communication with Gemini 9 as it passed over the Rose Knot tracking ship, and we now will play that tape.

RKV We have TM solid on the ATDA, both vehicles look good.

HOU Roger.

RKV Gemini 9, RKV Cap Com.

S/C RKV, let her go.

RKV Roger. I have a flight plan - I mean a PLA update for you.

S/C RKV, go ahead.

RKV Roger. Area 21 dash 3: GETRC, 32:37:55. RET 400 K, 21 + 06. RETRB 27 11. Weather marginal. Area 22 dash 3: 34:13:20. 21 + 17. 27 + 16. Weather marginal. Area 23 dash 3: 35:48:56. 21 + 24. 27 + 37. Weather marginal. Area 24 Bravo: 37:42:12. 21 + 21. 27 + 21. Weather good. Area 25 Bravo: 39:17:54. 21 + 26. 27 + 25. Weather good. Area 26 dash 2: 39:56:30. 20 + 50. 26 + 48. Weather good. Area 27 dash 2...01:32:04. 20 + 52. 27 + 04. Weather good. Area 28 dash 1 Charlie: 43:00:42. 20 + 50. 26 + 57. Weather good. Bank angles for all areas is roll left 85, roll right 95. No sep maneuver for any area.

S/C What I missed was just the GETRC in area 22
dash 3.

RKV Say again.

S/C Roger. The GETRC of area 22 dash 3.

RKV Roger. That is 34:13:20.

S/C Roger, out.

RKV Rog. We have nothing further for you Gemini 9.
You're looking good here on the ground. We'll
be standing by. Both vehicles looking real good.

That was taped voice communication between Gemini 9 and the Rose Knot tracking ship. At this time Gemini 9 is moving over the South Atlantic approaching the southern coast of the southern part of Africa and the west coast. We had one other brief communication with the spacecraft as it passed over the Ascension island tracking range and the report then from Tom Stafford - he made a very short report. He merely said there is a full moon on the horizon. He did not describe it otherwise. This is Gemini Control, 29 hours, 17 minutes into the mission.

END OF TAPE

This is Gemini Control at 29 hours and 40 minutes into the flight. Gemini 9 is now on its 19th revolution and is coming up around the Philippine's very shortly. At this time aboard the spacecraft according to our flight plan, Tom Stafford and Gene Cernan should be busy with the S-11 experiment. This is a photographic experiment designed to photograph the night time airglow and a sunrise twilight and any other unusual night phenomena such as the Northern Lights or an aberration in the airglow. While Tom Stafford aligns the spacecraft small end forward on the horizon, using a star as a reference, Cernan will align his camera on the horizon using the same star as a reference. They will take a series of three pictures of the eastern, western and southern horizons. Cernan uses a 70mm Maurer camera with and f.95 lens and he takes pictures with and without filters at various exposures. The Pilot Cernan will also photograph the thrusters that are firing as Tom Stafford maneuvers the spacecraft to the various directions. The experimenters are programming four pounds of fuel for each S-1 experiment. We have approximately 50 pounds of fuel on board, sufficient fuel to take us all the way through the Gemini 9 mission, with no problems. This is Gemini Control, 29 hours, 42 minutes into the mission.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 1:40 PM TAPE 114 PAGE 1

This is Gemini Control at 30 hours into the flight. And the Green Team - or the Black Team headed by Flight Director, Glynn Lunney has just relieved the White Team. Gemini 9 has just finished a pass within range of the CSQ in the western Pacific. Very brief transmission at that time. Tom Stafford reported that he had just finished the air glow photography experiment and was preparing for the D-14 experiment. The - which information on communication systems operating through the ionosphere is obtained. The Cap Com at the CSQ reported that Gemini 9 was go as it passed out of acquisition. This is Gemini Control.

END OF TAPE

This is Gemini Control at 30 hours, 10 minutes into the flight. Gemini 9 is over the Hawaiian tracking station on its 19th revolution. We are not interrupting the crew with voice conversation during this pass because the communications experiment is being conducted. The Hawaii tracking station Cap Com reports he does have solid telemetry on both Gemini 9 and the target vehicle. Hawaii is receiving the D-14 experiment data and it looks very good. This is Gemini Control.

END OF TAPE.

This is Gemini Control at 31 hours and 10 minutes into the flight. There has been very little conversation between tracking stations and Gemini 9 during the past hour. Tracking stations have just been standing by during the pass of this Gemini 9 over their stations because the crew has been conducting the S-11 experiment, the airglow photography experiment. We have not wanted to interrupt them. The RKV, the Rose Knot tracking ship then off the east coast of South America reported a visual sighting of the spacecraft on this pass, revolution 20, from their deck just shortly after sunset. We do have tapes of the conversation that did take place from acquisition at California down through the Tananarive station and we'll play that for you now.

California remote UHF

CAL California remote

HOU Gemini 9 Houston

S/C Houston, Gemini 9

HOU Roger Tom. We're standing by. We don't have anything for you this pass. Except one question, if you can recall when you closed the S-12 door, do you have any idea how long that door was running before it closed?
Over.

S/C We couldn't hear it operate.

HOU Okay, fine. Thank you.

S/C We couldn't hear it operate open or closed.

HOU Fine. Thank you very much.

S/C I just got locked. We'll get more data on it tonight.

HOU The experimenter had a question on opening that up again. If it took longer than 30 seconds to close and if you didn't hear it I doubt that you could estimate that.

S/C Roger

HOU Nine, Houston. I have nodal update for you, when your ready to copy.

S/C Okay. Standby.

Go ahead

HOU Roger. Node 29 46 20, rev 19 109.1 east, 19 hours, 33 minutes, right ascension.

S/C Say again longitude and right ascension

HOU Roger. Longitude 109.1 east, right ascension is 19 hours, 33 minutes.

S/C Roger, we got it. Thank you

HOU You bet.

Guaymas remote

California local

S/C Houston, Gemini niner

HOU This is Houston, go.

S/C Say again the time on that nodal update

HOU Roger. Time 29:46:20, rev 19.

S/C Okay we got it. 29:46:40

HOU 29:46:20

Gemini 9 Houston. One minute to LOS.

S/C Roger Houston.

Guaymas local

Texas remote

HOU RKV Cap Com, AFD

RKV AFD, RKV Cap Com

HOU Roger did you receive your MI

RKV I don't see any MI's yet.

HOU Okay, there's nothing at your site. The crew will be doing an S-11. Caution you not to call them and disturb them while they're doing S-11. If you want to give them some information you might pass it up to them and then tell them not to answer it.

RKV Roger will do. Be standing by.

HOU Okay

HOU RKV, Flight

RKV Flight, RKV

HOU You're standing by to stand by, is that correct?

RKV Thats affirm
I'll give them a call and tell them we're standing by and that's all.

HOU Say again

RKV I'll give him a call and tell him we have nothing for him and we're standing by

HOU Roger

HOU RKV, Flight

RKV Flight, RKV

HOU If the computer's on, would you send us an AOS and LOS computer summary.

RKV Roger

RKV (garbled - lots of noise)
RKV is off at the present

HOU Roger understand

RKV Gemini 9, RKV Cap Com. We have nothing for you
this pass. We're standing by.

S/C RKV Roger

RKV The IMU is on, he's in pulse mode, he is doing
some controlling.

HOU Roger. Thanks

RKV Roger
Everything looks normal

HOU Roger

RKV Flight we got a few people up on the deck looking
for the spacecraft. Just passed us, we just passed
sundown and we did have a visual sighting on it.

HOU Spacecraft or ATDA

RKV The spacecraft

HOU Sure, what else
We thank you

RKV Roger
They said they couldn't see any alligators up there.

HOU Roger, Roger. No alligators

RKV Gemini 9 RKV we have LOS in about a minute.

S/C Roger we're keeping on with the S-11

RKV Had LOS on Gemini

HOU Roger RKV

RKV Flight, this is RKV we've had LOS on ATDA and
everything wasgo at LOS

HOU Roger RKV

S/Cthe pulse rates.....

TANLOS.....

TAN Tananarive has LOS

HOU CSQ Cap Com AFD

HOU CSQ Cap Com AFD

CSQ AFD, CSQ to Cap Com how do you read

HOU Your loud and clear. Did you receive your MI

CSQ Negative

HOU Okay.

CSQ Correction, I've got it here.

HOU Besides the contingency alpha we also want a contingency
bravo.

END OF TAPE

GEMINI 9A MISSION COMMENTARY, 6/4/66, 3:20 PM TAPE 117 PAGE 1

This is Gemini Control at 31 hours 40 minutes into the flight.

Gemini 9 is over the mid-Pacific, not quite in range of the Hawaii station yet. The tracking stations are continuing to stand by without attempting to converse with the crew. At Hawaii acquisition the crew, Tom Stafford and Gene Cernan will perform another communications experiment. And we do not intend to disturb them at that time. We have very brief contact with them over the CSQ and we will play that tape for you now.

CSQ Gemini 9, if you are trying to contact CSQ
you broke up.

S/C No, we were not trying to contact you CSQ

CSQ Roger, understand.

CSQ CSQ Flight Cap Com.

HOU Go ahead, CSQ.

CSQ ...computer just faulted.

He is in mode 3 with his computer on and we will have to play his tape back to get the summaries to you.

HOU Understand your 12 18 just faulted.

CSQ That is affirmative.

HOU CSQ, Cap Com, AFD.

CSQ AFD, go.

HOU We have already received a main, an alpha
and a bravo from you.

CSQ Do you want that OBP number program? With
computer on ...light on.

GEMINI 9A MISSION COMMENTARY, 6/4/66, 3:20 PM TAPE 117 PAGE 2

CSQ AFD, CSQ. Did you copy?

HOU Affirmative. You calling Houston?

CSQ AFD, CSQ Cap Com.

HOU Negative OBC, CSQ.

CSQ Roger, understand.

Gemini 9, we have you go and LOS. Do not
answer.

CSQ CSQ has LOS, Gemini.

HOU Roger, CSQ.

CSQ We have LOS ATDA also.

HOU Roger.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 4:40 PM TAPE 118 PAGE 1

This is Gemini Control at 32 hours into the mission. Gemini 9 is now over the Pacific ocean, down close to the equator. We have entered the orbital phase in which Gemini 9 will sweep down over the southern hemisphere for the next several hours. We will not be within range of the California Guaymas or Texas station until tomorrow morning sometime. We had very brief conversation with the crew during the Hawaii pass and we will play that for you now.

AFD Hawaii Cap Com, AFD.

HAW AFD, Hawaii.

AFD Roger, disregard that query on S-11.

HAW Roger, will do.

Solid C-Band track intermittent..

HOU Roger, Hawaii.

HAW We are receiving good D-14 data.

HOU Roger.

HAW Gemini 9, Hawaii. We are receiving your D-14 data and all systems look good.

S/C Gemini 9, Roger.

Houston, Gemini 9. Could you check with Houston and find out what is their estimate on our hydrogen quantity, please.

HAW Roger, will do.

Did you copy that, Houston?

HOU Roger, we copied. 78 per cent Hawaii.

HAW 78?

HOU That is correct.

HAW Gemini 9, Hawaii.

S/C Go, Hawaii.

HAW The apparent is 78 percent.

S/C Roger.

HAW Gemini 9, Hawaii. We have one minute to LOS
and standing by.

S/C Roger.

HAW Hawaii has LOS on Gemini and ATDA.

HOU Roger, Hawaii.

END OF TAPE

.....from Flight

RKV Flight, RKV Cap Com
HOU One more S-11 coming at you
RKV Say again
HOU One more S-11 pass coming at you
RKV Roger
HOU Roger, RKV
RKV Okay, he's got his computer on.
HOU Standby
HOU RKV Cap Com, AFD
RKV Go ahead
HOU Give us an OBC at your AOS and another one at
LOS
RKV Roger
RKV Gemini 9, RKV Cap Com you need not acknowledge this
transmission. We've got you GO on the ground and
we're standing by.
RKV We've had LOS Gemini and the ATDA. Both looked
good going over the hill.
HOU Roger, RKV

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/4/66, 4:20 PM TAPE 120 PAGE 1

This is Gemini Control. 32 hours and 40 minutes into the flight. And Gemini 9 has just passed the east coast of Africa in range of the Tananarive station. We still are not attempting to contact the crew on these passes. Gemini 9 is in a night cycle on the 21st revolution throughout this entire night cycle is again conducting the S-11 experiment. The air glow horizon photography. All stations are monitoring the vehicles as they go by, report that they are go and look good. We show Gemini 9 in a 161.1 by 157.6 nautical mile orbit and the target vehicle in a 161. by 159.1 nautical mile orbit. This is Gemini Control.

END OF TAPE

This is Gemini Control, 33 hours into this mission. Gemini 9 is passing off the south coast of China, is within range of the Coastal Sentry Quebec tracking ship. We are standing by for conversation but we do not have any at the present time. We will stand by and see whether we can bring you this conversation between the CSQ and Gemini 9.

CSQ Water report down ispilot and command pilot, please.

All split down to fifty fifty.

Roger, understand. Gemini 9, could you also give me a water ... count, please.

Roger. 02444.

CSQ Roger, copy. 024444. Roger, Gemini 9, we have a valid temperature on the pilot at this time. You can remove the thermometers.

(long pause)

CSQ Both vehicles are still looking good, Flight.

HOU Roger.

(long pause)

CSQ Gemini 9, would you place your quantity read switch to ECS O₂, please? Quantity read switch to fuel cell O₂. Quantity read switch to fuel cell H₂, please. Would you place your quantity read switch to off and would you give me a report on your S-11?

S/C Roger, we have completed all S-11 as updated in the flight plan. We've completed all D-14's with the exception of the last one coming up at Hawaii.

CSQ Roger.is go and you're around 20 seconds - 30 seconds from our LOS.

HOU CSQ, Flight.

CSQ Flight, CSQ Cap Com. Go.

HOU Why don't you see if he's going to go ahead with the purge between you and Hawaii?

CSQ Houston Flight, you're barely readable.

HOU Roger. Why don't you see when he's going to do the purge.

CSQ He's finished his purge, Flight.

HOU He's finished?

CSQ Yes sir.

HOU Look all right to you on the ground?

CSQ It was - the purge was okay. We've had LOS on Gemini.

HOU Okay.

This is Gemini Control. As you heard Gene Cernan say, the last D-14 experiment, the communication's experiment through the ionosphere, is coming up on this next Hawaii pass in about eight minutes. Then at 33 hours and 30 minutes elapsed time, about 20 minutes from now, we will power down the spacecraft and the crew will have an eat period.

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 4:40 P. M

Tape 121, Page 3

This is Gemini Control.

END OF TAPE

This is Gemini Control, 33 hours and 41 minutes into the flight. Gemini 9 is approaching the west coast of South America and nearing the end of its 21st revolution. During the pass over the Hawaii tracking station, an updated flight plan was passed to the crew. They were reminded to continue drinking water. We won't attempt to contact the crew again from any of the tracking stations until in the morning. Tom Stafford and Gene Cernan have powered down their spacecraft and ^{they're} eating right now. They will then go into a ten hour sleep period. Prior to this time they will again activate the S-12, the micrometeorite experiment and will deactivate that immediately upon arising in the morning. This will give the experimenter 10 hours bonus on this experiment because of the shift in the EVA times, we are able to perform this experiment during two sleep periods instead of one as originally planned. We have a tape of the Hawaii pass and we'll play that for you now.

HOU Roger, Hawaii

HAW We're receiving D-14 data

Hawaii has solid TM on both vehicles.

HAW Gemini 9, Hawaii

S/C Hawaii, Gemini 9

HAW Roger, if you have time during the D-14, I have a flight plan update for you

S/C Okay, we'll copy in just a minute

Go ahead with the update

HAW S-12 34:30, sequence 01, S-12 44:30, sequence 02,
44:30 through 45:30 eat period, 45:30 through
49:30 EVA trip,

S/C Roger Hawaii, Gemini 9 S-12 34:30, sequence 01,
S-12 44:30, sequence 02, 44:30 through 45:30
eat period, EVA trip is 45:30 to 49:30

HAW That's affirmative and as we get near our LOS
I'll be turning your adapter C-band off

S/C Roger

HOU Hawaii, Houston Flight

HAW Go flight

HOU Ask them to keep working on the water if they
would. We got a big day tomorrow.

HAW Roger.
Houston would like for you to keep working on that
water. They say you've got a pretty big day coming
up tomorrow.

S/C Okay, will do

HOU Hawaii, Houston Flight

HAW Go Flight

HOU We've just about cleared up all our air to ground
business with the crew. You might mention that to
them and from now on we'll just stand by in silence.

HAW Roger.
Gemini 9, Hawaii.

S/C Niner, Hawaii

HAW This will be about all the air to ground conversations
we'll have with you for awhile. We won't be calling
you anymore for sometime unless there is something comes

HAW up we need you for.
S/C Okay, thank you very much.
HAW Houston, Hawaii
HOU Go ahead Hawaii
HAW Okay, we've transmitted C-band off and have
confirmation that it is off
HOU Okay fine.
HAW We have LOS on both vehicles

This is Gemini Control. The range between Gemini 9 and the target vehicle is now 60 miles, with Gemini 9 ahead and below the ATDA. We estimate that during EVA tomorrow the range between the two vehicles will be 135 to 140 nautical miles. This is Gemini Control, 33 hours and 46 minutes into the flight.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/4/66, 5:50 PM TAPE 123 PAGE 1

This is Gemini Control 34 hours 10 minutes into the flight. Gemini 9 is over Africa and in its 22nd revolution. And this is the night side of this revolution. The tracking ship Rose Knot reported all systems look good when Gemini 9 passed by them. Reported that Tom Stafford and Gene Cernan appeared to be resting. This is Gemini Control.

END OF TAPE

This is Gemini Control at 35 hours 10 minutes into the flight. Gemini 9 is over the South Pacific Ocean about mid-way between Canton Island tracking station in South America. Tom Stafford and Gene Cernan are in the first hour of the 10 hour sleep period. Ground stations report that both pilots appear relaxed and appear to be sleeping. They reported they were getting good solid telemetry on Gemini 9, and that both it and the target vehicle are go. Guidance and Control Officer, Arnold Aldrich, reports that Stafford and Cernan performed today's experiment with negligible expenditure of OAMS thruster fuel. We show fuel remaining at very near the 50 pound mark, and we should be in very good shape for tomorrow's extravehicular activity. This is Gemini Control 35 hours 11 minutes into the flight.

END OF TAPE

This is Gemini Control. 36 hours 10 minutes since the lift-off of Gemini 9, which is now in drifting flight in its 23th revolution. Gemini 9 is over China coming up within range of the Coastal Sentry tracking ship. The spacecraft is powered-down for the crew's 10 hour sleep period, which will not end until 44 hours and 30 minutes elapsed time, that's 4:10 a.m. CST.

The flight surgeon reports that the data that he's receiving from the tracking stations indicate that Gene Cernan is powered-down pretty well too. But that Tom Stafford appears to arouse when...once in a while. Gemini 9's orbit is now 161.1 nautical miles apogee, 157.4 nautical miles perigee. The augmented target docking adapter, the target vehicle is in an orbit of 161, by 159 nautical miles. This is Gemini Control.

END OF TAPE

This is Gemini Control at 37 hours, 10 minutes into the flight. Gemini 9 started its 24th revolution a short time ago. It is now just off the east coast of South America, where the Rose Knot has a good solid track on it.

We have not attempted to contact the crew since the Hawaii pass on the 21st revolution almost four hours ago. However, we are continuing to monitor the spacecraft systems. They all look good, all tracking stations are giving the Gemini 9 a "GO". The RKV Cap Com reports that the flight surgeon aboard the Rose Knot says that Tom Stafford, who had been stirring around some earlier had now...has quieted down and both he and Gene Cernan appear to be resting well. The Gemini 9 is now 80 miles, 80 nautical miles ahead of the target vehicle. It will continue to pull ahead and we expect a range between the two vehicles of 135 to 140 nautical miles during the extravehicular activities tomorrow. This is Gemini Control.

END OF TAPE

This is Gemini Control at 38 hours 10 minutes and 30 seconds after lift-off. Both vehicles recently passed over the tracking ship Coastal Sentry, and both were go on the ground according to the Spacecraft Communicator aboard the Coastal Sentry. The spacecraft is now in its 24th revolution, and the ATDA in its 53rd revolution. They are both over the South Central Pacific, and in about 29 minutes they should be within the acquisition range of the tracking ship Rose Knot, which is hove-to off the coast of South America. At 38 hours 11 minutes and 9 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control at 39 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 at the present time is over the Arabian peninsula. During the recent pass over the tracking ship Rose Knot, both the spacecraft and the target vehicle were shown as go on the ground by telemetry being received at the ship. After that pass over the RKV, the ship was released for the night in that this will be the last orbit to pass over the ship for the next several orbits. At 39 hours, 11 minutes and six seconds after liftoff, this is Gemini Control.

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/4/66, 11:50 P.M. TAPE 129, PAGE 1

This is Gemini Control at 40 hours, 10 minutes and 30 seconds after liftoff. Earlier in this revolution the Gemini 9 passed over the tracking ship Coastal Sentry south of Japan, and the spacecraft communicator there reported that both vehicles -- that is the Gemini 9 and the Augmented Target Docking Adapter were going as they went over the hill. The Flight Director here, Cliff Charlesworth, released the Coastal Sentry for the night since it is also the Coastal Sentry's last pass until several orbits later. Both the spacecraft and the target have just crossed the longitude of the Cape, which means they start a new revolution number -- number 26 for the spacecraft and 55 for the target. Sixteen minutes from now, both vehicles will cross over the Canary Islands tracking station; but it is not expected that there will be any conversation since the crew is still asleep at this time. At 40 hours, 11 minutes and 35 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 41 hours 10 minutes and 30 seconds after lift-off. Gemini 9 is crossing the northern portion of Australia at the present time. About mid-way through the 26th revolution for the spacecraft and the 55th revolution of the target. During the pass earlier in revolution over the Canary Islands tracking station, the Spacecraft Communicator at Canary reported that both, all systems were go on both the spacecraft and on the target. There has been no further contact with the crew since they're still asleep and not scheduled to wake-up for another 3 hours. At 41 hours 11 minutes and 13 seconds after lift-off this is Gemini Control.

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/5/66, 1:50 A.M. TAPE 131, PAGE 1

This is Gemini Control, 42 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 just finished its pass over the Canary Islands tracking station. Spacecraft communicator at that station said that all systems were go aboard Gemini 9. The crew is still in a sleep period, however, he did mention that the command pilot roused a little bit during the pass and also during the time the spacecraft was over the Canary station, the C-band beacon was turned off by ground command just before loss of signal. The spacecraft is presently in its twenty-seventh revolution, and the target in its fifty-sixth revolution. The measurements of the Gemini 9's orbit are 161.1 nautical miles apogee by 157.3 nautical miles perigee. At 42 hours, 11 minutes and 30 seconds after liftoff, this is Gemini Control.

END OF TAPE

This is Gemini Control at 43 hours, 10 minutes and 30 seconds after lift-off. Gemini 9 is nearing the end of the 27th revolution and a short while ago, made a pass over the north edge of the Carnarvon, Australia tracking station acquisition circle. The spacecraft communicator reported that both the Gemini and the target systems were all "GO" on the ground. Biomedical telemetry received at the Carnarvon station, indicated that the command pilot was sound asleep and the pilot appeared to be dozing.

The pass over the Carnarvon station lasted approximately six minutes and 48 seconds....a subsequence pass on the next revolution will be just about the middle, for a much longer pass.

43 hours, 11 minutes and 27 seconds after lift-off, this is Gemini Control.

END OF TAPE

This is Gemini Control at 44 hours 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is mid-way through the 28th revolution, and should be acquired by the Carnarvon, Australia tracking station within the minute. During the pass,...at the beginning of this revolution over the Eastern Test Range, Dr. Fred Kelly, Flight Surgeon here in Mission Control said that the biomedical telemetry readouts were being fed to him from the Eastern Test Range station. It showed that both crew men seem to be still fairly quiet. During the Canary pass a few minutes later, Canary Island tracking station reported all system were go. Carnarvon just reported they have acquisition and contact with Gemini 9, telemetry solid on the spacecraft.....we're still standing by for the Carnarvon pass,.....telemetry is solid on the target docking adapter.....all systems are go on the spacecraft at Carnarvon.....Carnarvon now has a C-Band track with the spacecraft.....Spacecraft Communicator at Carnarvon reported to Flight Director that/^{is}Cliff Charlesworth, here in Mission Control, that the pilot was still sound asleep and the command pilot was lightly dozing, according to the readouts they're getting there in Carnarvon.....at 44 hours 13 minutes and 24 seconds after lift-off this is Gemini Control.

END OF TAPE

This is Gemini Control Houston at 45 hours 10 minutes into the flight. The crew was awakened some 20 minutes ago as we began the state side pass, and Stafford greeted us with a very chipper, "hello down there". He noted that during the night, the cabin seemed to get a little cold, perhaps 10 degrees cooler than they've been running; here on the ground we had anticipated that. The problem seemed to be that we're building up, as much as we did in the flight of Gemini 7, a little excess fuel, fuel cell product water. The fuel cell product water empenges on the drinking water through a series of bladders, so the solution is worked out to dump some of the drinking water, and this was carried out, we dumped on the order of a pound to pound and a half of drinking water by directly connecting the drinking water nozzle, the squirt gun, to the uriceptacle and by placing certain switches to by-pass the radiator to dump the water directly over board through the water boiler. As I say this procedure was carried out during the state side pass. The crew has tagged up on their start of their EVA preparations which will begin during this revolution. We also to get a crew status report in some detail, they will get a planned landing area up-date at Canary, which acquisition circled they're entering now....at 46 hours and 28 minutes they are to receive a go, no go, for a 46-1 flight or the completion of the planned mission. At 48 hours and 58 minutes they are to receive their no, go no, for cabin de-pressurization, leading to the extravehicular activity. The sunrise time for the 31st revolution, which is critical for the start of the extravehicular activity, is set for 49 hours 26 minutes and 34 seconds, that's 49 hours 26 minutes sunrise on the 31st rev. We have now the tape of the state side pass, we'll play that for you now.....

END OF TAPE

TEX Texas, remote.

HOU FLIGHT Gemini 9, Houston.

SPACECRAFT Hello, down there.

HOU FLIGHT Good morning, how are you doing?

SPACECRAFT Alright, I guess. The sleeping got pretty cold up here last night.

HOU FLIGHT Yeah, we've been watching your temperatures. Look we got a little....problem with the water building up, what's your counter read?

SPACECRAFT Standby Neil. We're at 2472.2.202472.

HOU FLIGHT O.K., we're going to have you....have you taken any water at all out this morning?

SPACECRAFT We've just started draining the system and drinking it now.

HOU FLIGHT Well, we're going to have to dump some water....our... our suggestion here is to..dump it through the water boiler and we have a procedure we're ready to give you when..when you are ready to copy.

SPACECRAFT O.K.

HOU FLIGHT It's...what it amounts to is..dump at about two pounds of water, which is 60...66..counts on the gun.

SPACECRAFT Go ahead, Neil, with the procedure.

HOU FLIGHT O.K., we'll want to put..the radiator to bypass now.

SPACECRAFT Bypass.

HOU FLIGHT O.K., then your water valve and ~~condensate~~ ^{where} valve in normal, which is I expect/~~they~~ ^{where} are.

SPACECRAFT Roger, both is on.

HOU FLIGHT O.K., then we'll want to squirt out.....using the

HOU FLIGHT At 46;28, I have a GO/NO/GO for 46 dash one.

SPACECRAFT Roger, good.

HOU FLIGHT At 48:58. Have GO/NO GO for depress.

SPACECRAFT [Roger.

HOU FLIGHT And your sunrise, Tom, is 49 26 34.

SPACECRAFT Roger. 492634 for sunrise for depress.

HOU FLIGHT That's right. Now if you can drink some more water or put some in some water bags, there ~~why~~ probably help the margin that we've got for the next four or five hours.

SPACECRAFT Roger, We've done 25 clicks on the water boiler.

HOU FLIGHT Roger.

SPACECRAFT And I'm bring the spacecraft to a stabilize positionn
This should help to heat it up.

HOU FLIGHT O.K., you do have your radiator in bypass, don't you?

SPACECRAFT That's affirmative.

HOU FLIGHT O.K.

SPACECRAFT Neil, we had an evap. pressure.....(garbled)...evap.
pressure that you're on.

HOU FLIGHT O.K. That's good. I want to remind you here, Tom, that over Canary in about 10 minutes, six to 10 minutes, they'll be giving you a PLA update. You might check to make sure that you've got that right lookout.

SPACECRAFT Yeah, we still have the ^{evaporator} ~~exp~~ pressure layout, I've got to keep to it .

HOU FLIGHT O.K., Tom. WE're expecting that. How many clicks are you up to?

SPACECRAFT 39.

HOU FLIGHT 39?

SPACECRAFT Roger, 40 now.

HOU FLIGHT O.K.

GRAND TURK Hello, this is Grand Turk.

HOU FLIGHT O.K., we're about to lose you here, Tom. Let's
stop wherever you are and get a gun count.

SPACECRAFT Alright, I'm 47 clicks and the last digit is 2630.

HOU FLIGHT O.K., your last reading is 2530?

SPACECRAFT Right.

HOU FLIGHT O.K., Canary will have you here in four or five minutes.

SPACECRAFT Do you want us to continue on until we get the total
load to up right?

HOU FLIGHT No, Let's just let it go right there, that is good
enough.

SPACECRAFT Roger.

ANTIQUA Hello, LOS; Antiqua.

END OF TAPE

This is Gemini Control. That concludes the stateside pass. We got more information a few minutes later from the Canary station regarding the crew status. Stafford reports they have drunk since the last reporting period some 40 ounces of water. They've had one meal apiece. He described their sleep last night -- each man about four hours of solid sleep -- six to eight hours of dozing sleep. They sound rested. Here is the Canary tape.

CYI Canary has ac aid contact.

HOU FLT Roger, Canary.

CYI We have TM solid. Gemini 9, Canary Capcom.

S/C Canary, 9. Go.

CYI Roger. Would you put your thermometers in for the oral temp.
We have TM solid, Flight -- C-band track.

HOU FLT Roger, Canary. Canary, Houston Flight.

CYI Go, Flight.

HOU FLT OK. When you can give it to them, ask them to put the radiator back to flow. Go back to the normal configuration on the water management, and the evaporator heater off.

CYI Roger. Gemini 9, Canary. We have a valid temp on both. Would you place your radiator to flow.

S/C Flow?

CYI Roger.

S/C We're standing by for the PLA update.

CYI Roger. We'd also like your water management system back to normal configuration and the evaporator heaters off.

S/C Evaporators off.

CYI OK. 9, I'll give you the area and the times and then we'll go back to the back angles and weather.

S/C Roger. Standby one, please.

CYI Roger. Standing by.

HOU FLT Canary, Houston Flight.

CYI Go, Flight.

HOU FLT Check to see if he has an evaporator pressure light at this time. Just ask him if he still has an evaporator pressure light.

CYI Gemini 9, do you still have an evaporator pressure light?

S/C Negative. It's out and I've got the heater off, and I'm ready to copy.

CYI Roger. Houston Flight, Canary. We should see if it's on and ring A is decreasing on the ATDA.

HOU FLT Roger. Carry it with your update.

CYI Gemini 9, the area 29-1 -- 44:34:30, 20 +48, 26 +58. Area 30-1 -- 26:10:02, 20 +58, 27 +09. Area 31-1 -- 47:44:48, 21 +12, 27 +38. Area 32-4 -- 50:37:23, 20 +55, 26 +50. Area 33-4 -- 52:10: -- correction on that -- the GATRC is 52:12:49, 21 +05, 27 +18. Area 34-4 -- 53:48:18, 21 +12, 27 +33. Area 35-3 -- 55:07:29, 20 +49, 26 +50. Area 36-3 -- 56:42:55, 20 +59, 27 +07. Area 37-3 -- 58:18:23, 21 +13, 27 +22. Are you ready for your back angles?

S/C Go.

CYI Roger. All the back angles are as follows: roll left 85, roll right 95. The weather in the following areas is marginal: 30-1, 31-1, 35-3, 36-3 and 37-3. There is no set maneuver associated with any of these areas. Do you copy?

S/C Roger. Gemini 9. Roger. Would you give me the times again for 29-1 and 30-1 just to check.

CYI Roger. 29-1 -- 44:34:30, 30-1 -- 46:10:02.

S/C Got them all.

CYI Roger.

S/C starting to now, and horizon scan

CYI Flight, Canary. Could you come through on about the TM signal on the ATDA?

HOU FLT Yes, I copy.

CYI Roger.

END OF TAPE

CYI Do I go ahead with this fuel cell purge at this time?

HOU Yes, go ahead with the flight plan.

CYI Roger, we'll go ahead with the food and water report and all that.

HOU Say again.

CYI We'll go ahead with the food and water report first.

HOU Okay.

CYI Gemini 9 we'd like a food and water report on each crew man.

S/C Stand by.....Okay since the last time we've only had about 40 ounces of water, dumped some in the water boiler, and we've had one meal.

CYI Okay can you give me a sleep report?

S/C Roger, we had about 4 hours of solid sleep with about 6 hours of dozing.

CYI Roger copy....you're looking good 9, you can start with your fuel cell purge when you're ready.

S/C Roger.

HOU Canary, Houston.

CYI Go ahead flight.

HOU Send us an A summary Gemini.

CYI Roger....it's on its way.

S/C When I came over the hill flight, then CKO, 6 suit inlet temp was way up. On the way up for the radiator back to flow corrected all that.

HOU Roger.

CYI We've had Gemini LOS.

HOU Roger.

HOU Kano go remote.

CYI Canary Cap Com AFD.

CYI Go ahead Steve.

CYI Could you give me the PCM counts, and the C-L-0
1, water pressure?

CYI C-L-0 one, Charlie, Lema , zero one, Roger.

CYI Okay that count on Charlie, Lema, zero 1
is 2 2 1.

HOU Roger, thank you...would you put that in your
books please.

END OF TAPE

This is Gemini Control, Houston at 45 hours, 40 minutes into the flight. Several items as far as consumption history here for the notes, we've had no further contact with the spacecraft since Canary. It is now crossing the Indian Ocean.

We have approximately 1200 amp hours remaining in the fuel cells. They are continuing to produce electricity at a very good rate. Total of about 50 percent of the capacity remaining. Cabin pressure has held at a very steady 5.1 PSI since the beginning of the mission. Virtually no change noted in that.

The spacecraft orbit presently shows 157.3 miles by 161.1 miles, the target vehicle is in an orbit 158.6 miles by 1. excuse it...160.7 miles. During the extravehicular exercise, the target will be approximately 145 miles behind the spacecraft. Earlier Stafford was advised that the weather was marginal in the 30 dash one area, he was also told that it was marginal in the dash three areas. Since that report went up, we've had new information from ships in the area. And they advise that the weather is improving very nicely and they see no ^{weather} problem should a landing be necessary in those areas. We anticipate no need for a landing in those areas, but the area is improving in the prime recovery area in the Atlantic.

Propellant quantity...OAMS propellant, we show some 90...85 pounds of propellant, still available for this mission...approximately 50 pounds of fuel and 80 pounds of oxidizer and a plan that would give us about 85 pounds of usable propellant. This is Gemini Control Houston at 45 hours, 43 minutes.

END OF TAPE

This is Gemini Control Houston 46 hours even in the flight. Over Carnarvon a few minutes ago the crew was having breakfast, Bill Garvon put one question to them, he said if you don't have a full mouth of food, he'd like to know the on-board propellant quantity, and Tom Stafford with about a half mouth full of food replied 7 percent, which agrees with the earlier number which we passed on to you about 85 pounds of usable propellant remaining. The status remains unchanged, we will play this brief inter-change here for you at this time.....

CAR Carnarvon has telemetry solid in the spacecraft,
all systems go.

HOU Roger.

CAR I've got target contact.

HOU Roger.

CAR Telemetry solid in the ATDA.

HOU Roger.

CAR We have C-Band track.

CAR Gemini 9, Carnarvon Cap Com, all systems are
go would you place the quantity read switch to
ECS O2.

S/C Gemini 9, Roger.

CAR Fuel cell O2.

Fuel cell H₂.

Quantity reads off.....okay if you don't have a
mouth full up there we'd like a prop quantity read
out when you get a chance.

S/C ...7 percent.....

CAR Okay.

CAR Flight, Carnarvon.

HOU Hello Carnarvon.

CAR Did you copy that prop quantity?

HOU Affirmative, Bill how do the rest of the systems
look?

CAR Look real good.

HOU Okay.

CAR Flight Carnarvon.

HOU Hello Carnarvon.

CAR That fuel cell water pressure from the TM reads
18, 1 8.

HOU Roger.

HOU Could I have a PCM count on that Bill?

CAR Roger....

CAR Flight Carnarvon.

HOU Go Carnarvon.

CAR Okay that PCM count is 210.

HOU Roger, thank you.....

CAR Gemini 9, Carnarvon....we're 1 minute to LOS.

S/C Go ahead Carnarvon.

HOU Carnarvon could we have a LOS Gemini outline.

CAR Roger.....Carnarvon has LOS on the spacecraft.

HOU Roger, Carnarvon.

CAR LOS on the ATDA.

END OF TAPE

This is Gemini Control Houston, 46 hours, 10 minutes into the flight. The weather this morning goes like this. This is the forecast for the next 24 hours, or in other words, up to end of mission. In the mid-Pacific landing zone, centered about 300 miles northeast of Honolulu, partly cloudy skies, winds westerly 10 to 15 knots and seas three to four feet. In the western Pacific landing zone, centered 700 miles south by southwest of Tokyo, mostly cloudy skies with scattered showers, with winds southwesterly 15 to 20 knots, and seas five to six feet. In the eastern Atlantic zone, centered 300 miles west of the Cape Verde Islands, partly cloudy skies, winds northeasterly about 15 knots and seas four feet. In the western Atlantic, end of mission landing zone near 75 degrees west longitude, mostly cloudy skies with scattered showers, winds easterly at 15 to 18 knots and seas four to five feet. That shower activity reportedly is moving to the northeast and probably will clear out of the area within the next 24 hours. No new contacts with Gemini 9 since we left Carnarvon, we are in the Canton Island area. The crew is still eating breakfast, we don't expect additional contact until they reach the states, which will occur in some 12 to 13 minutes. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston 46 hours 40 minutes into the flight. The crew is now well along in their very detailed check leading up to the EVA exercise. This check lists runs, to give you some idea of the depth of it, it runs 11 single spaced pages in the flight plan. Hundreds of items involved. Switch settings are specified for every system onboard plus a great deal of equipment, special equipment involvement for Gene Cernan. During the recent pass across the states the spacecraft now slightly east of Bermuda, the crew was given a go for a 46-1, in other words the full 72 hour mission. That report brought back a very cheery, "Thank you" from Cernan. Last night the S-12 experiment, the emulsion pack, which is used to collect micro-meteorites was exposed for another 10 hours. The first night out the exposure time on S-12 was eight hours and 40 minutes. So the 10 hours is an added dividend having to do with the postponement of EVA, of course. We have now a very brief tape of the conversation across the United States, there was not very much chatter because Tom Stafford indicated they were busy with their EVA preparations. They postponed certain discussions until later in this pass. Here is the conversation.

HOU Guaymas go local, Texas go remote.
GYM Guaymas local.
HOU Gemini 9, Houston.
S/C Go ahead, Houston.
HOU Roger, Gene. We are going ahead early on this
 cross feet until they can take a look at across

HOU the states and we will go ahead and close the cross feed and fuel cell two heater off and we will come back on with that heater at Carnarvon. We want to watch that pressure temperature on that for a while.

S/C Okay, fuel cell O2 heater is off now and you want the cross feed closed. Is that correct?

HOU That is affirmative.

S/C Okay, it is closed and the heater is off.

HOU Roger, got some good news for you. Your Cubs won yesterday, 5 to 3.

S/C Great. How are the Astros?

HOU Well, I am sorry to say they are on the wrong end of a 9 to 6 score.

S/C I was batting zero yesterday, 500 today, maybe a 1000 tomorrow.

HOU Atta boy. How about a 1000 by noon.

S/C Yeah, that is all right.

HOU Gemini 9, Houston.

S/C Go ahead, Houston.

HOU Roger. You have your go for 46-1.

S/C Thank you. How is the weather down there today?

HOU Well, it was a little foggy when I came in this morning. I think it is probably going to be nice. Looks real good now, the late comers say.

HOU Gemini 9, Houston.

S/C Houston, Go ahead.

HOU This little test we ran a little while ago with that water, Tom, and dumping that stuff overboard we are not quite sure what is happening so would you give us a gun count when you complete drinking water any time during the next two revs.

S/C Okay, roger, we are right in the middle of EVA preparation. We will give you one later.

HOU Roger. 9, Houston. On that water we only need that when you are through drinking. Just before EVA. That is all we are really interested in. Just tank up on that stuff.

S/C Roger, we have been going pretty good on it.

HOU That a boy.

S/C Right now we are putting on the wire connectors and taping the connections.

HOU Houston, roger.

AFD Bermuda go remote.

BDA Remote.

Go ahead AFD

HOU Okay, you understand. We want to advise them when you have acquisition and he need not acknowledge.

BDA That is affirmative.

AFD And LOS, minus one. And then say, need not acknowledge one time.

BDA Roger.

HOU Okay be no more MI during EVA prep.

BDA Roger.

HOU Roger. And you also...

BDA Roger.

HOU Gemini 9, Houston we have approximately one minute to LOS and from now on we will be passive. We will give you a call AOS and one minute from LOS.

S/C Roger, we will keep you informed. We are getting the y connections on and working through there.

HOU Roger.

S/C Sequence 24.

HOU Roger Tom. Thank you.

END OF TAPE

This is Gemini Control Houston at 47 hours into the flight. EVA preparations are continuing very nicely. Over the Canary Station a few minutes ago Tom Stafford reported "we've got the big snake out of the black box." This is a reference to having removed the umbilical - the 25 foot umbilical from its stowage place. They have the Y-connectors in place now on the chest pack and Gene Cernan probably is hooking up the umbilical just about now. Relatively little communication between the ground and the spacecraft, we're letting them proceed at their own pace and standing by to give them any help as they might call for it. We have this brief conversation recorded from the Canary Station and the Kano Station. We'll play it for you now.

CYI Canary has acq aid contact

HOU Roger Canary

CYI We have Gemini TM solid C-band track, all
 systems GO

HOU Roger

CYI Gemini 9 Canary Cap Com. We have you go on the
 ground. You need not acknowledge this transmission,
 we're standing by.

S/C You can inform Houston that we've got the big
 snake out of the black box.

CYI Roger nine.

CYI Do you copy Flight?

HOU Copy. Affirmative

HOU Canary this is AFD

CYI Go AFD

HOU We'd like an LOS Gemini main

CYI Roger

One minute to Canary Island LOS

CYI Canary has LOS all signals. All systems GO Flight

HOU Roger Canary

Kano go remote

KNO Kano's remote

HOU Gemini 9, Houston. Standing by.

Gemini 9, Houston. You can go back to fuel cell

02 heater at auto at your convenience. Over

S/C Got that

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/5/66, 6:50 A.M. TAPE 143, PAGE 1

This is Gemini Control at Houston, 47 hours, 10 minutes into the flight. The spacecraft's over the Tananarive station. No new contact since we last heard from the crew via Kano. EVA preparations continuing. We are getting a little talk now. A little static in the background. Standby one, please. Tom Stafford advised he'd been running in platform mode, and he noticed a little roll developing. It's completely under control. He's back in 000 rates. He just wanted to advise us. Our flight plan is completely clear with - except for the item of EVA prep which continues to run. We expect the sunrise on that 31st rev to occur 49 hours, 26 minutes in elapsed time. A little more than two hours from now, and that's about the time that the hatch would open and we'd start ingress. That's the planned ball park right now. It may be refined later. At 47 hours and 12 minutes into the flight this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Forty-seven hours 18 minutes into the flight. And during the course of the Tananarive pass we learned from Tom Stafford, that he was having a problem with his number three thruster. This is a roll thruster. He noted a rate building up in roll. It is co-incidental I am sure, but this is precisely the same area where Neil Armstrong developed trouble during his flight with another thruster and of course the rates built up much more severely. In any case he has identified the problem in number three thruster. He shut it down and he will compensate for it by using other modes of thrusters to perform the various maneuvers. We do not expect to have any effect on the EVA exercise, at this time. The problem will be looked at very carefully over Carnarvon and additional judgments may be coming along, but right now we are still moving right ahead with our EVA preparations. Here is the voice tape of the Tananarive pass.

AFD Tananarive go remote.

TAN Tananarive remote.

HOU Gemini 9, Houston standing by.

S/C This is Gemini 9.

HOU 9. Houston. Go.

S/C I am having a little trouble with ...

HOU You are having a little trouble with what, Tom?

S/C Roger, with flash load, just took off in a big roll on me. Will keep you informed, we have got it back now to 000.

HOU Roger, understand.

S/C (Garbled)

HOU Gemini 9, Houston, go.

S/C(garbled) stand by.

HOU Roger, understand number three.

S/C Yaw right and roll left, seems to be our main problem.

HOU Roger.

S/C Okay, Houston, we are zero.

HOU This is Houston, roger, Tom and we have one minutes until LOS Tananarive.

S/C Roger.number three thruster is out.

HOU Roger. Number three thruster is out.

S/C Roger. ...(garbled)

HOU Roger, number three thruster is out.

S/C ...and also yaw and roll pitch...number three thruster is out.

HOU Roger, Tom understand, suggest roll logic to pitch. Over.

END OF TAPE

This is Gemini Control Houston, 47 hours, 31 minutes into the flight. As we noted over Tananarive, Tom Stafford reported some trouble with his number three thruster. He went through a varied detail check of his control modes crossing the Indian Ocean. When we picked him up at Carnarvon a few minutes ago, he and the ground seemed to be pretty well frustrated by the problem. He reported that the thruster - the inoperation of thruster number three was putting him into a roll rate of as much as 20 to 30 degrees per second, when he energized his second in-plate or the platform mode. This frustration continued for some seconds and then we have to chalk up a big plus sign for our Guidance Navigation Control Officer, Gerald Griffin. In a very quiet voice he asked him to check his circuit breakers on the scanner on-the horizon scanner circuit breaker. Tom Stafford checked this circuit breaker and found he had accidentally knocked it off apparently during the EVA preparations. He put the circuit breaker back on and everything settled down immediately. He has the number three thruster back, all modes are operating just as they have been throughout the flight. The knocking off of that circuit breaker completely explains the difficulty encountered in the control mode. We say again he has now - we have now fully explained and understand the control problems that Tom reported over Tananarive. This taped conversation over the Carnarvon Station will explain it to you. Here it is.

S/C

Aft is steering away - repeat away from the roll.

The pitch is - we put the platform to zero, zero, zero. It's like being in a 180 at R break. You know the way the needles go

CRO

Roger

S/C My yaw needle breaks the platform right here/^{and}I have to when the pitch needle is up I have to pitch down to bring it in. When the roll needle is to the right I have to roll left. Looks like that logic is reversed from the roll and pitch.

CRO Okay standby.

Do you copy Flight.

HOU Affirmative

HOU Carnarvon Cap Com, Houston Flight

CRO Go ahead Flight

HOU Will you find out if he is in acme secondary logic?

CRO Roger

Are you in acme secondary logic?

S/C Right. I have a firm reacme , bias power. Primary acme bias power and secondary acme bias power give the same results.

CRO Roger

S/C Now I'll go to secondary acme logic. Okay secondary logic in pitch gives the same as primary. The pitch needle is fly away some when you're zero, zero, zero.

CRO Roger. Do you copy Flight?

HOU Roger. Affirmative.

S/C The roll is the same, quoted in primary or secondary acme logic-makes no difference. The yaw and pitch pardon me - the roll and pitch needles are fly away some at zero, zero, zero.

CRO Roger.

S/C (garbled) plat mode it suddenly spun me up to about I'd say 20 to 30 degrees per second before I caught it direct.

CRO Roger.

S/C I'm now in pulse at zero, zero, zero, or in between plat and attitude and just *status quo* on the EVA list

CRO Roger, understand

HOU Carnarvon would you - standby one

HOU Carnarvon Cap Com would you ask the crew to check the scanner heater circuit breaker?

CRO Roger. Would you check the scanner heater circuit breaker?

S/C Roger. It was (garbled).....did show

CRO Rog. Run a little test and give us a show here.

S/C Okay, I'll go at the rate command direct reentry rate command - they all appear ok as far as the control modes from the stick

CRO Good show.

S/C Looks like I better knock it off on the EVA prep here.

CRO Do you copy Flight?

S/C We'll check number three thruster here in just a minute

CRO He's yawing left and right Flight

HOU Roger

CRO Pitching up, pitching down

S/C Okay, Gemini 9. I'm in plat mode now zero, zero, zero

S/C and it looks good.

HOU Okay Tom, we'll see you around the next time.

S/C Roger. Good show. We thought about everything but the breaker. I thought that Gene and I had gone through all kinds of control mode checks here. Okay, we're going on with the sequence.

HOU Roger.

Bill does he have number three thruster back.

CRO It was fine. Looked like it. I'll go ahead and ask him, I'm pretty sure he has.

CRO Gemini 9 Carnarvon

S/C Go ahead Carnarvon

CRO Okay you do have thruster three back don't you?

S/C Yes.

CRO Okay

S/C Looks good

CRO Flight Carnarvon

HOU Go Carnarvon

CRO That fuel cell H2 on the print out from my computer reads 240.

HOU Roger

Do you feel awake out there now?

CRO That'll do it to you won't it.

HOU Okay.

CRO Carnarvon has one minute to LOS

S/C Roger Carnarvon and we're on sequence 45

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 7:12 a.m.

TAPE 145, PAGE 5

ORC

Roger.

RC

Carnarvon has telemetry LOS

HCU

Roger Carnarvon

END OF TAPE

This is Gemini Control Houston at 47 hours, 50 minutes into the flight. We have a brief exchange between Gemini 9 and the Houston Cap Com via the Canton station. We'll play that for you first then we'll come back and note some of the events that are planned to take place during the EVA exercise. We have had to develop a special flight plan which has appeared only during the last hour or two here in the Control Center. We'll run through it for you noting some of the highlights we'll be watching for, but first here is the Canton tape.

HOU Gemini 9, Houston standing by.

S/C Roger, Houston. It looks like we're all squared away.....we're satisfied.....

HOU Roger.

S/C Sorry about that record.

HOU There'll be days like that.

S/C garble

And this is Gemini Control Houston. The spacecraft now on the outside edge of the Hawaii acquisition area. We don't expect any additional conversation via Hawaii. Sunrise again for EVA a critical item is noted at 49 hours, 26 minutes. At 49 the hatch is to be opened and Gene will stand up at that time. The first item calls for Gene to jettison and throw overboard some of the unnecessary pouches that contain various pieces of EVA gear. He will first retrieve the S-12 experiment, the nuclear emulsion package exposed on the adapter end of the spacecraft, hand it in

to Tom Stafford. He will then deploy the handrail along the adapter and set up his 16 mm movie camera with a wide angle lens. He'll proceed to the front of the spacecraft. This event to occur at about 49 hours, 30 minutes elapsed time. He'll attach a rear view mirror to the docking bar, the indexing bar, at the front of the spacecraft. He will then do a umbilical and a Velcro evaluation, before returning to the cabin area. He will hand the camera in to Tom Stafford, who will change the film on the EVA movie camera which will be re-installed in its place on the adapter area. Meanwhile, the EVA lights will be lighted and at 50 hours elapsed time the flight plan calls for the handrails and the foot rails to be extended in the adapter area. Within a minute or two Gene Cernan should be in the adapter. He will inspect the entire area, along the way he'll take a good look at the spacecraft. He will make sure that the bars are in place, firmly in place, the handrails and the foot rails. At 50 hours and 20 minutes he will physically enter the adapter and take a pressure reading on his peroxide levels in the Astronaut Maneuvering Unit. At an elapsed time of 50 hours and 25 minutes he is expected to actually don or put on, get into, the AMU - strap it around him. He will immediately proceed with the light warning check, testing the audio signals and the various lights which will serve to him as audio and visual cues to any untoward happening. At 50 hours and 30 minutes, 35 minutes, he's to give Tom Stafford an indication before undocking and uncoupling the AMU from the adapter

area. At 50 hours, 40 minutes into the flight, this would be about 80 minutes into the EVA portion of the flight, the AMU would be undocked. Correction - that AMU deployment would take place at 50 hours and 50 minutes into the flight. At which point he would move out away from the adapter a few feet and run a check on all of his thrusters, translating up, down, forward, aft, roll, pitch and yaw. At 51 hours, he would attach the 100 foot tether to the 25 foot umbilical, and give us a status check on the AMU. He would then proceed forward along the spacecraft. This occurring, approximately, at the end of rev 32 by which time the elapsed time would be 51 hours, 10 minutes. 51 hours 15 minutes, call it. At which point he would be over the Texas station. After a through look at the forward end of the spacecraft and attaching his tether to a holder in the area of the docking bar, he would move out in front of the spacecraft and perform a figure four maneuver, wherein he moves some 80 feet directly forward of the spacecraft. At the 80 foot point he would stop his movement and move in a left direction for, approximately, 80 feet. And then after completing that he would move off for the 45 degree angle again, a flat plane forward of the spacecraft, for some 75 to 80 feet, at which point he should be in the order of a 120 or 125 feet in front of the spacecraft. Then he would make a turn and come straight back toward the spacecraft, thereby completing a figure four or perhaps it might better be described as a pennant if you traced it on a piece of paper. A pennant with the point to the left. At 51 hours,

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 7:30 A. M.

Tape 146, Page 4

30 minutes he is to perform a status check and at which point he would be 110 feet out. His mode on the AMU would be a manual mode. He would turn off the automatic system. At 51 hours, 40 minutes he would be back on the umbilical at which point he would jettison the AMU tether, plugging back in to the spacecraft oxygen supply. Immediately after that he will jettison the AMU itself, pushing it down and away. Sunset at that time should occur at, roughly, 51 hours and 45 minutes. And it will be approximately that time that the hatch will be fully opened again. All during this period, during most of this period, the hatch will be only open two to three inches thereby protecting the plastic rubber seal on the inner face of the hatch. Cernan at this point would stand in the hatch and take some dim light photographic pictures of the airglow and other phenomena. And his last EVA act will be to retrieve a 16 mm camera mounted directly behind him. He would enter the hatch, according to our present plans, shortly before 52 hours elapsed time in the mission. The total EVA time budgeted is 160 minutes according to his plan. Call it 156 minutes. We've just come into.....

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 7:40 AM TAPE 147 PAGE 1

We have just come into contact with the spacecraft by the Guaymas Station and let's tune in now and keep track of this pass as it moves across the states.

Gemini Control here during this period there is no conversation. We have some additional information regarding that scanner heater circuit breaker. We simply identified it as the scanner circuit breaker back when we were over Carnarvon. The item that was giving us trouble was apparently knocked off during the EVA preparations. We credited Jerry Griffin, our guidance navigation control officer here with the solution to that problem. Jerry now passes the credit on to his staff support room. And specifically to James Walker, the ^{McDonnell} Aircraft Corporation. It was merely Walker who came up with the solution and passed it to Griffin, the controller, who in turn gave it to the flight director and it was then relayed to the crew. Mr. Walker has been congratulated by George Low the Deputy Director of the Manned Spacecraft Center for his quick thinking. We will return now and try to - we will stand by for any conversation as it develops in this state-side pass.

ARMSTRONG Computer 10, BNC.

GYM Go ahead.

ARMSTRONG I would like to change the low limit on GCOL
to 1.1.

GYM Roger.

COM Texas remote. Guaymas local.

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 7:40 AM TAPE 147 PAGE 2

This is Gemini Control Houston. One additional piece of information has developed during the roll motion that Tom Stafford reported on over Tananarive pass. It has been calculated that on the order of three pounds of fuel has been expended. We were estimating at that time something on the order 45 to 50 pounds of remaining fuel. Still more than adequate to carry out our maneuvers. Here is some conversation now coming from Gene Cernan.

CAP COM Go ahead GN

GN Roger, just wondered if you had any comments on Nancy Baker 01 with this EVA hardware?

CAP COM It is all right, thank you.

GN It is okay with you then?

CAP COM Roger.

S/C Electrical readout. How about giving me a readout on CA09?

CAP COM CA09, affirmative.

S/C Flexible readout.

CAP COM Go readout.

Okay, I will read it decimal - PCM 146.

S/C Thank you.

Roger.

This is Gemini Control Houston 48 hours 9 minutes. Apparently we are in for a very quiet pass as the crew continues their EVA preparation. If there is any additional conversation we will come back to it. But at this point we will sign off. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston at 48 hours, 43 minutes into the flight. Tananarive is within the acquisition area for the spacecraft at this time. We expect some conversation remoted from the Tananarive Station with Neil Armstrong here in Houston. Meanwhile we last heard from Tom Stafford via the Kano Station. He reported they were running a little ahead of schedule on their EVA preparations checklist. He reported everything was going very nicely. He also said they were drinking lots of water as per the instruction of the Houston Surgeon. Our Guidance Navigation Control Officer here advises that we should go into the EVA operation with approximately 45 pounds of fuel remaining or a total propellant remaining of 76 pounds. More than adequate for the EVA and the remainder of the mission. We are also pulling presently about 36 amps on the electrical system. This will go up a little bit higher as we move into the EVA, presently showing about 36 amps. Here is the conversation from Canary and Kano.

G/T LOS Grand Turk

HOU Nine, Houston's about one minute from LOS at Antigua.

S/C Roger Houston

 This is Gemini 9

HOU Go ahead

S/C Roger it sounds like (garbled) having the relief valve
 on the ELSS (garbled) release

HOU Say again please

S/C Roger, it sounds like the ELSS relief valve is
 (garbled) pumping

HOU Roger understand

ANT LOS Antigua

CYI Canary has acq aid contact

HOU Roger Canary

CYI Flight we didn't copy that last air to ground,
could you repeat that for us please?

HOU Canary we're probably going to get a clarification
on it. I'll be back to you Canary.

CYI Roger

CYI Canary has TM solid, all systems look good Flight.

HOU Roger

CYI Gemini 9, Canary Cap Com
We have you go on the ground. You need not acknowledge.
We are standing by.

S/C Roger. We're in sequence (garbled)

HOU What did he say there Canary?

CYI It sounded like sequence 50 Flight.

HOU OK
70

CYI Roger

CYI One minute to Canary Island LOS

S/C Roger Canary. You can tell Houston the cabin pressure
relief valve is (garbled)

CYI Roger, cabin pressure relief

S/C In sequence 70

CYI Roger

CYI Flight, Canary. Did you copy?
HOU Affirmative
CYI Roger
HOU Gemini 9 Houston standing by
S/C (garbled)
HOU Houston, Roger
Kano remote
KNO Kano is remote
HOU Gemini 9 go ahead
S/C Roger. We're both - looks like we're a little bit ahead of schedule here and we're fixing to (garbled) up on water. (garbled) reads 2650 when we finished drinking.
HOU Okay thank you Tom
S/C All systems look real good.
HOU Very good
We'll give you that sunrise check at Tananarive.
We're one minute to LOS
Tananarive go remote
HOU Carnarvon Cap Com Houston Flight

This is Gemini Control Houston, 48 hours, 47 minutes. That concluded the conversation via Kano. We are having some spasmodic conversation via Tananarive. We'll bring you those a little later. At Carnarvon the Gemini 9 crew is to be given a GO or a NO GO for a cabin depressurization. A note or two on the warning lights

and tones available to Gene Cernan on his extravehicular equipment. He has six status lights which give him warning of potential or actual problems. They function much like the warning lights on a car. One - the first item is a hydrogen peroxide light, which would come on should the pressure in the hydrogen peroxide or the gas system in the AMU fall below 380 pounds per square inch, within plus or minus 30 pounds per square inch of that value, 380. The hydrogen peroxide presently which has not yet been activated is reading a very constant 85 pounds per square inch which is the expected value and it also shows 71 degrees in temperature. A second light concerning the peroxide quantity would come on should the quantity drop below thirty (30) percent. He has on board 26 pounds of hydrogen peroxide fuel. He also has a gage - all these gages and lights are on the upper part of the chest pack fully in view as he moves about outside the spacecraft. In every case when anyone of these little white lights comes on he also gets a 1700 cycle per second tone. A beeping tone as an added reminder. If he decides its not a real problem he can turn the tone down to the point that its inaudible but he cannot turn off the light. It would remain on and continue - enable him to continue to check it. Tom Stafford would also get that tone in the spacecraft. It would be broadcast through the little transceiver available to Gene with which Gene will communicate with Tom Stafford while he's outside on the tether. A third light will be following the oxygen supply pressure. When the pressure in the bottle on the AMU drops below 800 pounds per square inch within plus or minus 60

it will also - the same light would be activated should the temperature of the oxygen fall - move plus or minus 5 degrees. In a fourth light will monitor the reaction control system in the AMU and would go to white should the RCS power drop below 13 volts. This is a 28 volt system in the AMU. It would also be activated should Cernan be operating in a stabilized mode and in the event that a thruster would fire more than 7 percent of the time. Thus a guard against a stuck thruster. A fifth light would come on if there is a problem of flow in the emergency oxygen bottle located in the chest pack. He's got a thirty minute supply of oxygen in the chest pack which under normal circumstances would not have to be access for other than checks. In the AMU he has a 7.3 pound supply of oxygen which is more than an hour's supply, something in the order of seventy minutes. A sixth light will indicate a drop in suit pressure. Suit pressure is normal during the EVA, EVA exercise at 3.7 pounds per square inch. A light would come on should that pressure drop below 3.3 pounds per square inch, within **plus or minus** .1 pound. There is a relieve valve in the suit, should the pressure build up over 4.5 pounds per square inch. That covers the six primary warning devices that Gene has and at this time I believe we have a taped conversation of the Tananarive Station and we will play it for you now.

HOU FLt

Carnarvon Cap Com, Houston, Flight

END OF TAPE

HOU Carnarvon Cap Com, Houston Flight.

CRO Houston Flight, Carnarvon Cap Com.

HOU Roger. Bill, at this time we're happy with the spacecraft configuration depending upon your air to ground data you can give them a GO/NO GO for egress.

CRO Roger.

HOU I should say depress. Gemini 9, Houston standing by.

S/C garble.

HOU Roger, Tom. Not reading you very well. Let's wait until you get a little more elevation. Gemini 9, Houston, standing by for your message again.

S/C Roger. We'll go ahead with the flight plan
.....

HOU Roger.

S/C garble

HOU I couldn't get that. Would you like to have a time hack on your event timer for sunrise?

S/C garble

HOU Okay, it's set up 20 minutes and we'll give you a 20 minute time hack in about a minute and 45 seconds.

S/C Okay. Mark 20 minutes.

HOU Roger. Okay, we're about 15 seconds now to 20 minutes counting up.

S/C

Okay.

HOU

3 2 1 Mark. Gemini 9, Houston. One minute
to LOS Tananarive.

This is Gemini Control Houston. 48 hours, 55 minutes into the flight. In - while you were listening to that taped conversation via Tananarive, our Flight Director Gene Kranz was in conversation with the Carnarvon station. He told Carnarvon that we were happy with all the readings, all the status of events to this point. He instructed the Carnarvon station to go ahead when they acquire in some two to three minutes to give the crew a go for depressurization. I repeat, he told Carnarvon to give the crew a go for depressurization. This event is to occur over the Carnarvon station, and the actual depressurization would take place between Canton and Hawaii - closer to Hawaii, actually. At 49 hours and 20 to 23 minutes into the flight. The critical time is 26 minutes. That event to take place just a little bit east of Hawaii. This is Gemini Control Houston.

END OF TAPE

GEMINI 9A(?) MISSION COMMENTARY, 6/4/66, 3:50 AM TAPE 150 PAGE 1

This is Gemini Control Houston 49 hours 10 minutes into the flight. We have been monitoring the heart rates very carefully during this past rev and during this period of work activity they have been running somewhere between 80 and 90. Tom's heart rate when we encountered that little problem with the roll thruster about an hour and a half ago, jumped up to 105 over the Carnarvon station. But it settled back down immediately. Overnight, both men slept with a heart rate of running between a very low 40 up to 50. Dr. Berry has advised here that he expects Cernan's rate to run on the order of 140 to 160 during the EVA exercise. This would correspond very favorably with that shown by Ed White during his exercise outside Gemini 4. We have some taped conversation now from the Carnarvon station and we will play it for you at this time.

HOU Carnarvon Cap Com, Houston Flight.

CRO Houston Flight, Carnarvon.

HOU Roger we have just talked to the Tananarive contact and they thought that Tananarive was receiving spacecraft whirly on the ground. If the UHF com is pretty poor at your site slightly shortly after acquisition you might suggest they go to UHF-2 and give that a try.

CRO Roger, have a good trip.

S/C (Garbled)

CRO Roger.

HOU Carnarvon, what are you reading in RAO3 EVA suit

HOU pressure?

CRO That is off scale low.

HOU Roger.

CRO PS02 is running about 815 psi, ECSO2 quantity
is 53 left right secondary bottles are 5290 and
5260.

HOU Roger.

CRO Flight, Carnarvon.

HOU Go, Carnarvon.

CRO Okay, on the EVA suit pressure coming out of
the computer I now read 2.56.

HOU Is that PSI

CRO That is affirm.

Flight, Carnarvon.

HOU Go, Carnarvon.

CRO That is decimal, too.

HOU Okay.

CRO Flight Carnarvon.

HOU Carnarvon Cap Com, Houston Flight

CRO Go ahead.

HOU Roger will you verify or see if the crew has
closed their EV visor yet?

CRO Roger. Gemini 9 have you closed the EVA visor
yet?

S/C Gemini 9, negative.

CRO That's negative flight.

HOU FLIGHT Roger

CRO The ECS pressure is down to 791.
That's a computer readout flight.

HOU FLIGHT Roger, why don't you have him pump up
the ECSO 2 pressure?

CRO Roger.

G Gemini 9, Carnarvon.

S/C Go ahead, Carnarvon.

CRO Okay, I'm reading 791 on ESCO2 pressure,
do you want to turn your heater on
and crank it up? It's up to 810 now
flight.

HOU FLIGHT Roger.

CRO Flight, Carnarvon.

HOU FLIGHT Carnarvon.

CRO Okay, I've got tape motion here, it looks like
the tape recorder is running.

HOU FLIGHT Roger.

CRO He's got Pump A and both loops up.

HOU FLIGHT What are you reading now on RAO 3?

CRO Stand by. Still .2. ESCO2 is back up to 839.

HOU FLIGHT Roger.

CRO Flight, Carnarvon.

HOU FLIGHT Go Carnarvon.

CRO On this RAO 3, the meter reads essentially 0
but the data keeps telling me its 2.56.

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 8:50 a.m. Tape 150, Page 4

HOU FLIGHT Okay.

CRO I'm getting a PCM count right now.

HOU FLIGHT That's the bottom end of the scale there, Bill,
so you're correct in both counts. The meter should
be reading off scale low.

CRO Rog.

Carnarvon has LOS.

HOU FLIGHT Roger Carnarvon.

CRO You look good at LOS flight.

HOU FLIGHT Okay, Bill.

END OF TAPE

EVA portion

GEMINI 9A (2), MISSION COMMENTARY, 6/5/66, 9:03 a.m. Tape 151, Page 1

This is Gemini Control Houston, 49 hours 23 minutes into the flight. We are listening to the crew via the Canton station. They have advised at 49 hours and 19 minutes Stafford reported that he was depressurizing and the cabin was showing about 3.5 pounds of pressure -- or less than that. At 49 hours and 22 minutes, about a minute ago, Cernan reported we are opening the hatch and we will start playing this conversation as it happens..

S/C(garbled conversation between Cernan and Stafford).....

S/C Cernan My heel caught on something, couldn't see it.
That's all right I'm allright now.

S/C Stafford Okay.

S/C Cernan It sure is beautiful out here Tom.
If I had my Hasselblad I'd take a picture of **that**.

S/C Stafford Okay.

S/C Cernan I can't turn around fast enough!

S/C Stafford That figures.

S/C Cernan Fifty feet out now, I'll be transferring back.

S/C Stafford Fifty?

S/C Cernan Okay. I tried to grab a hold of the rail behind
.....(garble).....bucket of bolts.....
I tried to install.....ah, the hand rail in
the back is out. I don't know Tom, but I may
be able to get this one.

S/C Stafford Uh-huh.

S/C

S/C Cernan Yep, I got that one.

S/C Stafford (garble)....suit pressure?

S/C Cernan I can't see it its too dark out here.

S/C Stafford I don't want it. Let's hold it. Keep the
visor down for the present

S/C Cernan Okay, the visors down now Tom.

S/C Stafford Okay. Check the gain levers now.

S/C Cernan Okay, its checked. Okay, I'll check again,
but I already put them there Tom.

S/C Stafford Okay.....(garbled).....

S/C Cernan Stand by, wait a minute let me check these.
Up and no.....(garbled).....

S/C Stafford Real good.

S/C Cernan Why float out?

S/C Stafford Yeah.(garble)...jettison overboard, don't
keep it.

S/C Cernan It's a little bit dark yet, Tom, Let me see.

S/C Stafford Roger, stand up now.

S/C Cernan Pressure is holding about 3.9 right now.

S/C Stafford Okay, I'm holding.....(garbled).....

S/C Cernan Okay, turn on the medium flow and very comfortable.

S/C Stafford Real good show.(garbled)....

S/C Cernan Okay, I'm turning around and trying to get the S-12
now, Tom.

S/C Stafford Oh good.

S/C Cernan The sun sure is bright. (rough?)

S/C Stafford Boy, I guess it is.

S/C Cernan Pull my leg down, Tom.

S/C Stafford What one?

S/C Cernan That one.

S/C Stafford Yeah, okay.

S/C Cernan Hook it under the instrument panel, I'll keep from coming out. Okay, the pressure still seems to be holding at 4.(garbled).... still seems to be nominal right now.

S/C Stafford Roger, pressure 3.6.

S/C Cernan Okay, the S-12 lanyard is on.

S/C Stafford Right.

S/C Cernan Here comes the S-12, Tom.

S/C Stafford Okay.

S/C Cernan Just a minute.

S/C Stafford I got the S-12.

S/C Cernan Okay, I'm leaving go.

S/C Staffordthe hand rails.

S/C Cernan The hand rail is deployed.

S/C Stafford Okay, good, are you coming?

S/C Cernan Okay, I'm trying to get them out, Tom.

S/C Stafford All rightee.

S/C Cernan It's a long way back to that hand rail.

S/C Stafford Is it?

S/C Cernan Okay, keep it holding, Colonel.

S/C Stafford Okay, I've got you.

S/C Cernan Pretty much of a bear to get at this thing because the hand rail is so far back.

S/C Stafford Oh.

S/C Cernan Pull me back down.

S/C Stafford I'll pull you back down.

S/C Cernan Okay. Pull me down some more.

S/C Stafford Okay?

S/C Cernan(garbled)....Pull me back a little more.
I don't see anything waving off the adapter
from here.

S/C Stafford Good show.

S/C Cernan I put my Hasselblad around a little bit.

S/C Stafford Okay, want to hold it?

S/C Cernan Got the camera now let me check the settings
again, Tom.

S/C Stafford Okay.

S/C Cernan Six frames per second, 1/200th, f-16.

S/C Stafford Roger.

S/C Cernan Strange world out here you know it?

S/C Stafford Yes.....(garbled).....

S/C Cernan(garbled)....I had it in but it wouldn't snap
down.

S/C Stafford Okay, try it again.

S/C Cernan Pull me down?

S/C Stafford Okay.

S/C Cernan That was a hard fit, but its in.

S/C Stafford Okay, that's good.

S/C Cernan Okay, let me turn around before(garbled)...

S/C Stafford All right.

S/C Cernan Pull that leg down.

S/C Stafford I got you.

This is Gemini Control Houston. Gene Cernan is going about his duties in a very business-like way. It sounded to us here on the ground the communication a little choppy to start with. It improved as we moved through the center of the Hawaii circle and we lost the acquisition about a minute ago. We should pick them again in about two minutes via California. At 49 hours and 26 minutes elapsed time, Gene did retrieve the S-12 micrometeorite impact emulsion dish. He also deployed the hand rail about two minutes later, and he noted that it was quite a distance back to the hand rail. He seemed to have a little trouble setting up his EVA 16 mm camera and now we have re-acquired via California. Let's go back to the spacecraft.

S/C ...control power. Okay let me take a breather here now. Okay. Everything wants to line up the ELSS wants to line up in my face everything I let go goes up.

HOU Houston standing by.

S/C Roger.

HOU Okay.

S/C ...reset and I know you are, boy.

You have got a beauty coming.

Houston, Gemini 9 testing the vox, how do you read me?

HOU We are reading you loud and fairly clear Tom.

S/C Aren't you reading ... vox too?

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 9:13 AM TAPE 152 PAGE 2

HOU Roger, you are clipping a little bit Tom, but we are getting most of it.

STAFFORD ...and he is taking a break here to relax. He is taking a couple of pictures standing in the seat and we will be going on the flight plan shortly.

HOU Very good.

STAFFORD Sure would help the break in short order if I could have a cup of coffee.

HOU Okay.

STAFFORD Bet Dr. Gilruth and George Low/^{and}probably Chuck Mathews are having one about now. (pause) Neil, it looks like the bird is coming up now on Baja California. It looks as if that weather is rough, then I have got a couple of islands down here.

HOU Yeah, that is right, Tom.

STAFFORD Okay, Gene feels real good on that ELSS now. The temperatures are good and our suit pressures are holding real good.

HOU Roger.

CERNAN Okay. (pause) about two one minutes, Tom. Okay you want to pass the umbilical out, is that what our next step is?

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 9:13 AM, TAPE 152 PAGE 3

STAFFORD I will pass it up.

CERNAN Whew! Hey, we are coming right over LA, I think.

STAFFORD (Garbled)

CERNAN I can see, I can see Edwards, I can see the islands.

STAFFORD I got it, we will have to do ... on it. (Pause)

See the F-4 near the runway?

CERNAN Yep.

STAFFORD That is a little thing the Air Force built...

CERNAN Okay, can you see ... now or what?

STAFFORD (Mike keying and garbled)

CERNAN I see...

STAFFORD Okay, good....

CERNAN ...did you get it?

STAFFORD (Garbled)

CERNAN I got worlds of good shots of LA,^{and} aircraft Baja California.

STAFFORD Yeah. Look up China Lake bed.

CERNAN Okay, can you pull that in any more? ...okay.

STAFFORD . That is about it (garbled)

CERNAN Do what?

STAFFORD (Garbled)

CERNAN I can't ... up here.

STAFFORD (Keyed out)

CERNAN Spell it out and give it to me.

STAFFORD (Garbled)

CERNAN Got a picture of Baja right here.

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 9:13 AM, TAPE 152 PAGE 4

STAFFORD Okay....Gene is taking a picture of Baja California
we will get

HOU Houston roger.

CERNAN ...goes up Tom?

STAFFORD Yeah, here they are here.

CERNAN Okay

STAFFORD (Garbled)

STAFFORD Okay wait a minute now.

CERNAN Take it a little bit slower on your ... panel

STAFFORD (Garbled)

CERNAN Yeah, mine is holding good.

STAFFORD real comfortable....

CERNAN Okay, you had better give me the docking bar...

STAFFORD (Garbled)

CERNAN (Garbled)

CERNAN Boy, that snake is really running around out
here.

STAFFORD Twelve minutes, 30 seconds (garbled)

CERNAN Okay, I am going to see if I can get out here,
Tom....

STAFFORD Okay....(garbled)...go on out for a bit.

CERNAN when you were leaning forward.

AFD Texas remote, California local.

TEX Texas remote

CAL California local.

CERNAN I can't get there unless I come down a little
bit.

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 9:13 AM TAPE 152 PAGE 5

STAFFORD (Garbled)...okay, he is down now. (mike keying)....

CERNAN Hello spacecraft ...

STAFFORD (Garbled)

CERNAN Looks like both(garbled)

STAFFORD You look pretty out there, Gene. Sure trying
to float up, though.

CERNAN Yeah.

STAFFORD (Garbled) (pause) like you are upside down and
the other (garbled) (mike keyed)

CERNAN ...go there, if I can get over here and make a
picture, Tom ...(garbled)....I am sorry, it is
really hard to get any torqueing when (garbled)

STAFFORD Yeah (garbled) looks like you are going to fly
right off that thing. (garbled)

CERNAN (Garbled) (pause)(mike keying) how about smiling
(mike keying) ... come/^{on}you, smile.

END OF TAPE

STAFFORD garble

CERNAN Okay, Tom.

STAFFORD garble

CERNANto the left. To my left, Okay?

STAFFORD To your left.

CERNAN Okay, I though it was to your left.

STAFFORDon the ground signal. Let me know if you get near to those thrusters.

CERNAN Yeh, I don't know where I'm going right now so hold on a few seconds. I'm getting near it, Tom.

STAFFORD Okay, let me know when you get on the adapter. You may be able to hold on there. Did it come off?

CERNAN Stand by. I'm okay. The snake's all over me.

STAFFORD What?

CERNAN Snake's all over me, Tom.

garble, garble

CERNAN If I can swing out I'm going to try to get out of here by playing out the umbilical.

STAFFORD Okay.

Garble, garble.

CERNAN I'm going to hitch off. Okay, Tom, here I go.

STAFFORD That's it. Okay, Gene, real good. It looks like the umbilical by itself is a pretty^{bad} way
.....

STAFFORDslowly from our left. I'm taking pictures.

CERNAN I can't get over, Tom, to get where I want to get.

STAFFORD All right.

CERNAN If I can get started in a certain way I'll be all right.

STAFFORD All right.

CERNAN Okay, Tom I'm going to stand by here.

STAFFORD Okay. I can see you in the dark theis working real good.

CERNAN Okay, I'm near the aft thrusters, Tom.

STAFFORD Okay,shall I turn them off?

CERNAN Okay, you better turn them off.

STAFFORD Thrusters off.I'm going to take a picture of you through the mirror.

CERNAN Okay, I'm outside now.

STAFFORD You look real fine.....

CERNAN Okay, I'm going further outside, Tom.
Oh, what a beautiful spacecraft, golly.

STAFFORD I just gothere

CERNAN I'm going to try and get out in front of you where I can get a good evaluation of the pod and the umbilical.

STAFFORD Okay.

CERNAN I'm going to get over on your side and evaluate the Velcro pads, Tom. Okay, I'm just about through with the adapter.

STAFFORD Okay, I'm in pulse mode.through with the thrusters. Okay, I'm ready for your reports.

CERNAN Okay, I'm still here and I'm going to start using one of those Velcro pads. I lost it,

CERNAN it came right off my hand.

STAFFORD garble

CERNAN Say again.

STAFFORD garble

CERNAN I got you a little better. I still want to
evaluate these hand pads, if I can. Okay,
I'm stuck on this thing with a hand pad right
now, but they won't stay. Velcro is not
strong enough here.

STAFFORD Velcro won't hack it, huh?

CERNAN It looks better here. I must say it's nose
is burnt off slightly.

STAFFORD Are you going back on the adapter again?

CERNAN Yep.

STAFFORD Okay. Where are you?

CERNAN Right outside your window. I got a picture of you.

STAFFORD Try to put some pressure on the spacecraft, Gene.

CERNAN The only control I have is the umbilical. The
shorter it is the better control I have.

STAFFORD garble

CERNAN Okay, Tom, put me down. I'm ready to go out
here now, if I can. Away from you. Right out
in here. Okay, I'm at the end of the umbilical.
Garble, garble.

This is Gemini Control. During this period Cernan's suit pressure has run a very constant three point seven pounds. Stafford's suit pressure 3.6. Stafford's heart rate has been a very steady 90. Cernan's

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 9:22 A. M.

Tape 153, Page 4

has oscillated some, running fairly close to 155 during work period. He notes the shorter the umbilical, the more control he has. At one point he referred to having snake all over me. This is a nickname the crew has give the umbilical. They're talking again as we pass over the Florida coast.

STAFFORD

GARBLE Come out in the sun while I get a picture of you. Come out in the light.

CERNAN

I've shortened the umbilical. It works better on me now. I'll try this other hand pad but so far it doesn't look like it's stiff enough.

STAFFORD

All right. Shorten up on your.....

END OF TAPE

STAFFORD Shorten up on your umbilical if you don't want
....(garbled)

CERNAN Roger, that'll be good.
There goes that other hand pad. I couldn't keep up
on it.

STAFFORD Okay, understand the velcro isn't (lost transmission)

CERNAN And one ...came right off in my hand

STAFFORD Okay.
(PAUSE)

STAFFORD Gene bar mirror is really a fine piece of gear
I can see you real well.

CERNAN Okay Tom I'm coming back by the hatch here for a
second. What time is it?

STAFFORD Okay about 24 minutes after sunrise.

STAFFORD On your last roll you didn't get anywhere with your
umbilical, and any(garbled).

CERNAN Yep.
(PAUSE)
Your switch is goodfor (garble) (pause) I don't
have any torque capability.

STAFFORD I'll run your signals by hand here and I'll see
what I can do for you.
(PAUSE)
How's that?

CERNAN Give me six morea little bit (Next transmission garbled)

STAFFORD OK Gene ease around here and take a rest.

CERNAN OK

STAFFORD Houston, Gemini 9, how do you read?

HOU We're still with you Tom.

STAFFORD OK. Gene's done the umbilical evaluation and it looks pretty rubbery out on the (garble)
I've got him back of the cockpit now and can see him real well with this docking bar mirror.
Our suit pressures are holding good. We're both looking for Ascension standby for confirmation.

HOU Roger we got that

HANEY This is Gemini Control Houston, the crew seems to be following very closely the flight plan sketched out for you about an hour ago. Cernan is back in the area of the cockpit and they're about ready to change the camera film. We're on the far eastern edge of the Bermuda acquisition zone which overlaps with Antigua. If we get some additional conversation we'll go right back there. Several times we've heard Cernan refer to the fact that he had no torqueing or roll ability with the umbilical. Of course he does not have a handheld maneuvering gun as did Ed White. He does note a tendency to float upwards above the spacecraft with the umbilical, which

corresponds very closely to the experience with White. Let's go back now to the conversation.

CERNAN Do you want the film out of the camera?

Next transmission is garbled

CERNAN Okay it's still running. (Referring to the camera)

Next transmission is garbled

G/T Grand Turk LOS

Next transmission is garbled

CERNANlittle low in spots

HOU Gemini 9 Houston, let's take a check on that primary tank pressure now. Just bump it up.

Next transmission is garbled

ANT Houston approaching LOS

STAFFORD I've got the thermal cover all squared away for you Gene.

CERNAN Okay would you give it to me?

This is Gemini Control in Houston. Just as we began to talk Antigua lost the signal with the spacecraft. Ascension will pick it up at 50 hours and one minute into the flight. We presently read 49 hours, 57 minutes. The crew noted that they had changed the film in the EVA camera. Stafford noted at the end of that conversation that he had jettisoned the thermal curtain which protects the AMU device in the after-end of the adapter. He's also illuminated the EVA lights. They are now, or in about 20 minutes, will be moving into a night area. The flight plan calls for Stafford to extend the hand rails and the foot bar in the adapter area which Gene will be braced against when he dons his astronaut

maneuvering unit. Meanwhile Cernan is to move to the adapter area and inspect the area generally and look at any strap hangings that might be part of the separation from their Titan booster. He didn't note any earlier. We had a very brief report there. He didn't see a lot of straps as we saw on the Gemini 6 spacecraft. He will test the bars - the hand rails and the foot rails - to make sure they are securely locked in place, and he is to enter the adapter at 50 hours and 20 minutes into the flight or right about sunset with the spacecraft over Tananarive. Once in the adapter the first check he will make with the AMU is to check the pressure on the hydrogen peroxide reading and he will check this with Stafford who also has a cockpit read-out. Here on the ground the Flight Controllers are looking at their various readings and they are all giving very favorable reports to the Flight Director. The doctor notes that Gene Cernan's heart rate toward the end of the stateside pass had dropped down to the order of 125 beats per second, an indication that he is adapting very nicely to space walking.

END OF TAPE

HANEY we are presently showing 50 hours even into the mission, Ascension should acquire at 50 hours, one minute and 58 seconds. We'll come back when they do acquire the spacecraft. This is Gemini Control Houston.

ASC Ascension AOS, UHF promoted.

 This is Gemini Control Houston again. Ascension has reacquired the communication is a little choppy, but let's listen.

S/C (garbled)..hatch down.

CAP COM Roger.

 Tom, can you see whether the tape recorder power circuit breaker is on or off on the right console?

Stafford ...on.

CAP COM Ok.

Stafford As soon as we are in position we'll radio the swivel switcher for you.

ASC Ok.

Stafford How's it going there, Gene?

Cernan If I get closer it pulls the hatch.

ASC Roger, spacecraft.

ASC Gemini 9, do you expect to proceed with (garbled).

Cernan spacecraft, I'm coming around.

Stafford ...space (garbled), pull it a little, pull it a little.

ASC catch.....on the hatch area.

Stafford We see it.

Cernan Its pretty close, Tom.

Stafford] You'll have to watch that.

Cernan Ok, (garbled) laying out there.

Stafford Ok. Be sure.

Cernan (garbled) crawl back in there.

Stafford Ok, it it goes real easy we'll slip it the wide stroke.... original (garbled).

Stafford The hatch is pretty stiff out here in the open position, if you can hold it back 10 to 20 degrees we might be able to do (garbled)

Cernan Its going all the way, go ahead.

Stafford No problem.

Cernan Did you pull the hatch any further?

Stafford I want you to pull, Gene.

Cernan ...or 10 inches, ok.

Stafford Ok.

Cernan Back here on the adapter you had better cut the thrusters off.

Stafford Ok.

Cernan I'm back here close to the hatch, hold on there while I blow those EV bars.

Cernan (garbled) you got the thrusters off, don't you?

Stafford Roger

S/C Garbled

ASC Say again.

S/C He's proceeding (garbled)

A:SC Are your thrusters off?

S/C (garbled) do a lot...maneuvering

Stafford OK, stand by, mark for off.

ASC Ok, now you better go ahead and....

Stafford (garbled)

Cernan (Garbled)...but I didn't see any yet.

Stafford Don't go wrong.

Cernan Thrusters off?

Stafford Yes, they are both cold.
(Garbled) ^{There} There it is.

Cernan Okay, it's fifteen. I think I can get it off now.

Stafford He seems to be very concerned about this.

Cernan (garbled) is his primary concern.

Stafford That's so.

Cernanspace...I.....pitch...roll

Stafford ...roger (em?)

Cernan Yeah, I just pulled it open

Stafford Have you got the valve covers?

Cernan Yeah, I just threw it away

Stafford Good, good..did you get the adapters up?

Cernan ...Let me get these hose up

Stafford Roger, let me know what the status is.

CAP COM Houstons approaching LOS Ascension

ASC Roger, he's turned thrusters off, turn off all
the ...on the.. time....(garbled)

CAP COM Houston, Roger.

This is Gemini Control Houston. Communications are, as I am sure you are noting garbled. We can catch about every third or fourth word. We did gather that Gene was moving to the area of the adapter to inspect the separation plane between the adapter and the second stage of the Titan. Once he passes the adapter edge he will make

a very careful visual inspection of the AMU, insuring that the bars are in place, the foot rails and the hand rails and he will check his reaction control system handles very carefully on the AMU before moving on with the flight plan. We presently read 50 hours and 10 minutes. The crew has consistently stayed right with the flight plan as written. We expect sunset to occur in the Pretoria area at 50 hours and 16 minutes into the flight at which point Cernan is to enter the adapter area. Our next acquisition is slated for 50 hours and 13 minutes through Pretoria, South Africa and followed by an acquisition at Tananarive at 50 hours 18 minutes. It is unlikely that we would have any voice communication coming back from Pretoria. I think it will be monitor, a ground monitor only situation. This is Gemini Control Houston.

END OF TAPE

HOU Voice control, Houston Com check.
Voice control.
HOU Mike remote control with Tananarive, please
VOICE CONTROL Go ahead.
TAN This is Tananarive.
HOU Roger. Stand by for quick remoting check.
TAN Okay.

This is Gemini Control Houston. During this interlude between stations let's check the temperatures and pressures existing in these two suits. In Stafford's suit the pressure at last reading which was Cape down range reading shows 3.67 pounds per square inch. In the right suit, the EVA - Cernan's suit - the temperature is running 54.7 degrees. The pressure 3.73 psi. Meanwhile, the AMU hydrogen peroxide the gas fuel, which has not yet been activated - the system still is inactive until Tom Stafford turns the switch in the cockpit - that reading shows a very steady 85 which it has run since the beginning of the flight. The peroxide temperature is 71 degrees. This is Gemini Control Houston.

Tananarive go remote.

This is Gemini Control Houston. The Tananarive communicator has just been advised that his station is remoted. We expect some contact here momentarily. We presently show 50 hours, 18 minutes into the flight. There's Tananarive coming in, almost right on schedule. Tananarive confirms acquisition. The signal from Tananarive is even choppy than that from Ascension. It is completely unreadable. There is communication coming, however. Garble.

END OF TAPE

This is Gemini Control Houston as best we can understand Tom Stafford and Gene Cernan are going through their check lists, preparatory to donning the Astronaut Maneuvering Unit.

TAN Houston, this is Tananarivee.

HOU Stand by Tananarivee.

Tananarivee go ahead.

TAN ECS 46%, do you want the cross feed open?

HOU Negative, the answer is negative.

Tananarivee com tech, this is Houston. Would you verify that reading 46%? 46% is that correct?

TAN This is com tech, Tananarivee, that is affirmative.

S/C Stafford Tananarivee we have to keep at high rate to keep the pilot comfortable.

TAN You have to keep at high rate to keep the pilot cool. Is that correct?

S/C Stafford Affirmative.

TAN Houston, this is Tananarivee.

HOU Go ahead, this is Houston.

TAN Roger, the pilot says they have to keep at high rates to keep the pilot cool.

HOU Roger, understand.

TAN

Tananarieve has LOS.

This is Gemini Contron Houston. Its doubtful whether you can understand much of that conversation. It was extremely garbled. Probably the most garbled pass we've had during the mission. In any case, we did manage to decipher here that Stafford reported he was using the high rate of oxygen flow in order to keep the pilot cool. The temperature on Gene Cernan's suit is still 54.7, his pressure 3.73. We had expected to use the O2 high rate, the oxygen high rate system during this period and it should be cooling off just about as they go through their sunset. Cernan, outside the spacecraft, will see a drop in temperature on the order of 3 to 400 degrees as he goes from a sunless to a black night. The onboard oxygen supply shows 46% remaining and they still have an option here, if they'd like, they can open a cross feed valve and bring in -- introduce -- the fuel cell oxygen supply, making it common to both the breathing oxygen as well as the oxygen required to operate the fuel cell. This request was passed on to Houston -- the suggestion that perhaps they should go to the cross feed valve and the answer went back in the negative. We would like to keep them on the onboard supply oxygen for this time. Carnarvon will the next station to acquire. That acquisition not to come at 50 hours, 34 minutes into the flight. We're presently reading 50 hours, 29 minutes into the flight. According.....

END OF TAPE

....and according to our flight plan Gene Cernan should be putting on, getting into the AMU, strapping it about his waist at just about this time. The - once he has gotten into it he will go through a light and wiring test - light and signal warning test excuse me. Once that is completed he will take a two to three minute rest. Following the rest period he will go through a visual acuity check to see what kind of stars he can see through his - with his EVA visor - his special gold plated visor in the up position and the down position. He is due to give a rather complete pilot status report at 5 hours and 34 minutes to Stafford. By Carnarvon they will be ready to go for the undocking of the Astronaut Maneuvering Unit. That event to take place about 5 hours and - 50 hours and 38 minutes into the flight - at 50 hours and 30 minutes into the flight. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston. Gemini 9 has tagged up with the Carnarvon Station. The ECS quantity is showing 42 percent which on the nominal. Tom Stafford reports that Cernan is encountering some fogging up of the visor. They are keeping the high rate O2 flowing in order to reduce this fogging. Cernan also noticed his pressure reading gage on his arm is fogging slightly also. They report their having a little more difficulty then expected in deploying the attitude control arms on the AMU. Cernan's words were "they didn't work out - their not working out just as they did in the simulations." We have some conversation , it is extremely choppy. All we're catching is the last word from Stafford and the first or the last word from Cernan but here is the way it sounds.

CRO Carnarvon is standing by

CERNAN I got news for you, the oxygen pressure is at zero.

STAFFORD(garbled)

CERNAN (garbled)

CERNAN The gage isn't opened yet, so lets see what happens.

STAFFORD OK

(C) Open.....(garbled) valve

CERNAN garbled

CRO Carnarvon is standing by

S/Cgarbled.....

CERNAN this visor is sure fogging up.....garbled

CERNAN I've got the battery switch to go.

Okay battery switch on.

CERNAN My pressure reading is fogged up, my visor is fogged up.

STAFFORD Leave it on Gene.
Carnarvon, Gemini 9

CRO Go ahead 9

STAFFORD He's fogging real bad.....garbled.....keep the fogging down to a minimum and he got the attitude controller arms and the maneuver controller arms out but it was far more difficulty under zero g than they did in the simulations.

CRO Roger

STAFFORD His pressure gage is fogged and his visor is fogged.

CRO Roger. You copy Flight?

HOU We read it.

STAFFORD Houston our ECS quantity is 42 percent

HOU Roger understand
That quantity is right on the nominal.

S/C How are you doing Gene?

CERNAN It's really fogged up Tom.

STAFFORD I'll leave it at 350garble....Let's take a rest.

CERNAN ...garble...feeling, I believe we're sideways.

STAFFORD Yea. Garble, garble.....
Carnarvon this is Gemini 9

CRO Go ahead 9

STAFFORD garble...builds up a heat load so the only
 one we have hooked up is the 125 foot.
 He's still hooked to the umbilical.

CRO Roger understand
 Carnarvon coming up on LOS

CERNAN OK Tom I'll go ahead and make the electrical
 changeover

STAFFORD Roger. Carnarvon we're going to make the electrical
 changeover. He's had a little bit of a rest.
 His BFO2 is 41 percent relay that on to Houston.
 We'd like to have a recommendation from them when
 we get to Canton.

CRO We're real happy with that Tom.

STAFFORD Ok real good

CRO Carnarvon has LOS

This is Gemini Control Houston. Immediately after the Carnarvon
pass we had the following report from the surgeon. He said coming
into the Carnarvon area Gene Cernan was showing a heart rate of
160. At loss of signal from that station at that station he
read 135. He said the command pilot has been running a very
steady 85 as a heart beat and he pronounced the two of them in
good shape. Cernan is continuing to hook up the various connections
that he must make on the AMU. At last report he was plugging in
the electrical system. We're presently showing here 50 hours,
48 minutes into the flight. At this time he should have had
- should have hooked up all of his oxygen and electrical connections

and made the preliminary checks on those. The next sunrise is set for 50 hours, 50 minutes into the flight. It will occur before the crew reaches Hawaii. If they are still right on the flight plan as they have been to date, they will have deployed the Astronaut Maneuvering Unit before we acquire at the Hawaii Station. That acquisition is to come at 50 hours, 59 minutes into the flight. A ship, the range tracker slightly west and south of Hawaii should get some communication from the pair however, about three minutes earlier at 50 hours, 56 minutes into the flight. We're a little puzzled by Tom Stafford's repeated concern over the oxygen quantity. We show this as exactly nominal following the flight plan curve. I'm sure we'll cover this in more detail over Hawaii and over the next sweep across the states. At 50 hours, 49 minutes into the flight this is Gemini Control.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 10:36 A. M.

Tape 160, Page 1

This is Gemini Control Houston, 50 hours, 56 minutes into the flight. Gene Cernan now has been extra-vehicular for slightly more than an hour and a half. We put it at about 94 minutes since hatch opening. At one point during the Carnarvon pass, he brought several of us up short when he reported, I've got news for you. Our oxygen quantity reading is zero. And then he quickly noted he had not energized the switch on the side of the AMU which makes the oxygen flow. He did have some difficulty with the switch but once he did get it switched, it flowed very nicely and it showed the proper reading. The people in one of the back rooms here in the Mission Control Center are monitoring very carefully each of the extra-vehicular systems, are entirely satisfied with their operation to date. There is a question about the fogging that Gene mentions that, perhaps, he did not have his EVA visor down over his normal suit visor which might account for some of it. As we come up on another sunrise we're quite certain he will have his extra-vehicular visor in place. The Range Tracker is standing by for any communication that may come along now. And, we're listening closely for that. Apparently, we will not have communication through the Range Tracker. The Hawaii station should acquire about one minute from now. We'll come back then. This is Gemini Control Houston.

END OF TAPE

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 10:41 a.m. Tape 161, Page 1

This is Gemini Control Houston. We've heard from Tom Stafford via Hawaii. We show presently 51 hours and one minute into the flight. Stafford reports that the pilots visor is still very fogged over. He said also that the communications from Cernan is extremely poor. He describes Cernan's communication as a "loud gargle." Tom also said that the work involved in getting the AMU ready for deployment is some four to five times more difficult, more work, than had been estimated. And he said Cernan had been resting. They had not deployed the AMU and Stafford says that^{if} the fogging condition doesn't improve within the next few minutes, they're seriously considering calling the AMU no-go. He has relayed all this to Houston. It's being considered here now. We're prepared to play this tape for you at this time.

S/C Houston, Gemini 9.

HOU Houston, here, Gemini 9, we're reading you pretty weak, go ahead. Gemini 9 Houston, go ahead.

S/C Hello Houston, Gemini 9.

HAW Gemini 9, Hawaii.

S/C Roger, Hawaii, I want you to relay to Houston for me.

HAW Roger, go ahead.

S/C About four or five times more work than^{what} we anticipated. The pilots visor is completely fogged over, nearly frozen over.^{Gonna} Let him stay there

S/C STAFFORD

and just relax.(garbled)...communications
are very poor. He has a loud gargle. Everything's
.....(garbled) I can barely read him. Also,
the attitude control arm is not.....(garbled)...
completely. If the situation doesn't improve,
or if there is any trouble getting the restraint
harness hooked up, I would call it a no-go on the
AMU. Let him stay there and rest for a while.

This is Gemini Control Houston, Stafford has just been on the line
and he says that he has decided the situation is no-go -- no-go for the
AMU. He says Cernan's visor is still fogged over. He also says the
transmitter from the AMU is so garbled that he has great difficulty in
reading Gene and he has directed Gene Cernan to switch back to the space-
craft umbilical and they'll take another look at the situation. This
is Gemini Control at 51 hours and four minutes.

HAW

Flight, Hawaii.

HOU

Go ahead, Hawaii

HAW

He says he's getting extreme fogging on his visor
and its trying to freeze up. And also, that he
is having quite a bit of trouble reading him,
that the pilot was fairly garbled. He has made
the election.....(garbled)....

S/C STAFFORD

.....(garbled).....the right hand hatch. It is
fairly free for my length of reach for the first
couple degrees.

HAW

Roger, you say the right hatch moves freely.

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 10:41 a.m. Tape 161, Page 3

S/C Stafford

Right, of course it moved freely when it became near closed. When it was opened is when it was real stiff. It's still pretty free as far as I can push it up and down.

HAW

Roger, understand.

This is Gemini Control Houston. Gene Cernan is back on the spacecraft's umbilical now. And he's back in communication with us. There was a period there during Hawaii when he was trying to transmit over the AMU transmitter and of course, these transmissions go only to Stafford and are not relayed to the ground. That would account for the lack of his voice and of Stafford only transmission. This is Gemini Control standing by.

S/C Stafford

Can you see out at all? Gene? Can you read me okay, yes or no? Okay, your transmission was awfully garbled. Okay, did you get the word? I say it's a no-go, it's still fogged up and can't get the Attitude Controller arm stored on the restraint harness. 'Cause you can't see it now, switch back to the spacecraft electrical umbilical. Hawaii, Gemini 9.

HAW

Gemini 9, Hawaii.

S/C

No-go for the AMU. The pilot's fogged up completely. The AMU transmitter is so garbled I can barely read it. The attitude controller arm will not install to the proper position. And I want him to switch back to the spacecraft electrical umbilical.

HAW Okay, we have that.

Roger and we concurⁱⁿ/the no-go.

S/C He has to expend ~~four~~ five times more energy than what we(garbled)....andin Zero G in the airplane.

Haw Roger, understand and Houston agrees in the no-go.

S/C Roger.

HOU FLIGHT Hawaii Cap Com, Houston Flight.

HAW Go flight.

HOU FLIGHT If you get a chance, you can ask them to see ^{adapter} if he can get some sunlight into the/area.

HAW He said that he was attempting to get the sunlight on him now.

HOU FLIGHT Okay.

S/C Stafford Hawaii, Gene said to pass on that he hated to do it but he doesn't have any choice and neither do I.

HAW Roger, we understand.

Flight, Hawaii.

HOU FLIGHT Go Hawaii.

HAW Okay, he's back on spacecraft umbilical, now, we have TM back.

HOU FLIGHT Okay.

S/C Stafford Let me know when you get ready to switch back to the electrical umbilical, Gene?

S/C Cernan Okay.....(garbled).....

END OF TAPE

This is Gemini Control Houston, 51 hours, 8 minutes into the flight. At last report, Cernan said he still had approximately 75 percent fogging condition on his visor. And, while the situation is still in some doubt, it does not appear that the AMU will be used during the mission. There going to have another re-evaluation as we move into the California area of acquisition. We are acquiring now at California. Let's stand by. Hawaii has LOS.

HOU Roger, Hawaii.

HAW Sorry about that AMU.

Garble from spacecraft.

STAFFORD Hello, Houston. Theis pretty high overhead. The view is still fogged over.

HOU Okay, Tom. We're reading you loud and clear now.

STAFFORD We called it quits with the AMU. We had no choice.

HOU We concur.

CERNANthe camera out.

STAFFORD Still foggy?

CERNAN About 50% fogged over.

STAFFORD Roger, you're through with....

CERNAN Did you get this?

STAFFORD Yes, I got it. What about for theDo you think it's going to fog when you ... garble.

CERNAN How much time do we have to go to night side?

STAFFORD I don't know, we've got a little farther yet.

CERNAN Okay, garble...I'm staying fogged right now.

HOU Tom, this is Houston. You might have Gene check his emergency bottle pressure when he gets a chance

STAFFORD Roger. We will. He's on high rate, Neil, and he's still fogging.

HOU Roger, when he can see well enough to read that bottle pressure, we'd like to get an idea what it is.

STAFFORD Roger, will do. Gene, can you read your emergency bottle pressure on the...

CERNAN Yes, it's about 6800.

STAFFORD Houston, did you copy, 6800?

HOU Yes, very good.

CERNAN Say, it looks like there is an airplane in the contrails down there.

STAFFORD Can you see out good?

CERNAN Yes, I can see right through my nose, but I can't see in front of my eyeballs.

STAFFORD We're coming up to LA. I've got the frost free....garble.

HOU Yes, that's some kind of a first, Tom.

STAFFORD I have to agree with you.

CERNAN Hey, Tom, what's that guy doing with a Texas license out there on a California highway?

STAFFORD Which highway you talking about, the freeway?
The Golden....

CERNAN That guy on the motorcycle.

STAFFORD Oh, the Golden State freeway.

CERNAN Yeh.

STAFFORD Okay, Gene, how much can you see out now?

CERNAN Okay, I've got my left eye I can see through
and I can see through my nose and my right
side but my extreme left side is still fogged.

STAFFORD Okay, Houston. He can just see through his
one little
nose and through / hole in his left eye. I
can see in the mirror that he's pretty well
fogged up to about 60 to 70 percent of his
visor.

HOU Roger, Tom. And we're copying Gene pretty
good, too.

STAFFORD Okay.

CERNAN I'm taking just a little rest, Tom.

STAFFORD Okay. He's taking a little rest now, in fact,
we'll be passing right over

This is Gemini Control Houston. We want to confirm that the AMU
decision made by Stafford was NO GO. We've cancelled the AMU experi-
ment. Cernan is back on the spacecraft electrical power and oxygen
and at the present time he's taking a little rest as the spacecraft

moves across the New Mexico area. Gene came through with amazing visual definition that he could see through a little spot where his nose was but he could not see through where his eyes are. But, apparently, as to demonstrate that his vision wasn't completely obscured he asked why that motorcycle or car down there on the California freeway had a Texas license plate injecting some levity into the situation which, I suppose, is needed at this point. We're showing 51 hours, 14 minutes into the flight here and we expect the Texas station to acquire momentarily.

CERNAN Neil, you might tell everyone down there that's concerned, I'm sure sorry about this.

HOU This is Houston, Tom. Tell him we're not concerned a bit.

STAFFORD GARBLE

CERNAN All right, while I'm standing here..... did hang up, by the way. One handrail was deployed. The foot rail was deployed. The armrail with the umbilical guard were not deployed. They werebut I was able to get past there without any problem by just hanging loose and I swung the loose and the umbilical guard came out and squared away. I have the starboard EVA lights back there and I have one ... light. And I think where the problem was that just before sunset I bet my

pack got well over 100 degrees because it was really hot. And right after it got cool my visor started up and I could just with thevisor. I just couldn't see enough of where I was trying to get at to identify.....fogged completely over.

HOU We copy.

CERNAN And I guess it's about 40% fogged over right now

STAFFORD garble ...The sun's up pretty high here.

CERNAN I'd like you to ask Houston how we stand just now. My pressure gage is still fogged. It's about four.

STAFFORD Okay. One thing. How about getting the docking mirror out....garble

CERNAN You want that out of there?

STAFFORD Yes, we want it out of there.

CERNAN Okay, I'll go up and get it.

Texas remote, Cal local.

TEX Texas remote.

This is Gemini Control Houston. Cernan's moving up now to the forward end of the spacecraft to retrieve the rear view mirror which he mounted on the docking bar at the - earlier in his extra-vehicular activity. We have no firm estimates yet on just when Gene will return to the spacecraft expected to come, perhaps, five to ten minutes now. The flight plan

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 10:48 A. M.

Tape 162, Page 6

showed that he could remain out up to five hours and 50 minutes. He may elect to take the full time which is just not known at this point. His fogging is now reduced to about forty percent. Let's go back for additional conversation.

CERNAN forward. If you canforward, do it.
garble.

END OF TAPE

(Garbled for about 3 minutes, cutting in and out)

StaffordI don't want... again!..

Cernan I'm plugging up again now, just working here in high.

Stafford Houston, Gemini 9.

CAP COM Houston go.

Stafford Ok, just during this period here he's fogging up when he went up to retrieve the docking bar. I'm going to make the recommendation that we ingress before sunset.

CAP COM Roger, we agree with that, Tom.

Stafford Ok, there's no use being out there taking pictures, making (garbled) trouble closing the hatch. We're going ahead and close the hatch.

Cernan Ok.

Cernan garbled

Stafford garbled (Both laughing heartily)

Stafford Ok, come on.

Cernan That's what they needed, to bail me in.

Stafford Ok

This is Gemini Control Houston. Stafford has recommended that Cernan return to the spacecraft before sunset. He has planned to return to the hatch area about 51 hours and 45 minutes into the mission and then take some sunset and darkness photographs. However, due to

the fogging condition which still obscures about 40 per cent of Gene's visor the decision has been made by Stafford, concurred here on the ground, that Gene return to the spacecraft and the hatch be closed fairly shortly. We still don't have a complete explanation for the fogging. We do know that while in the AMU area, in the adapter section, suddenly the temperature rose - Cernan reported he got quite warm and when he did, the fogging condition nearly obscured his visor area - it then became retarded - he could see more, but it still persisted and when he left the adapter area it was still 75 to 80 per cent obscured. It's now down on the order of 40 to 50 per cent. The two of them now are working...stowing the umbilical, getting Gene back. Let's go back and listen to this conversation.

Cernan ...(garbled) forward....there you go.
 (garbled) Gee, Tom, I'm really fogged up, I
 think I'm getting more fogged up now.

Stafford Ok Houston. He's beginning to get more fogged
 up just as staying here so we are going ahead
 and ingress.

CAP COM Roger, we concur.

Cernan Ok Tom, how does it look down there?

Stafford (Garbled)

Cernan Thank you...(garbled) huh!

Stafford No problem.

Cernan Tom?

Stafford I'll free you, Gene.

Cernan Ok? Ok, there it goes.

Cernan (Garbled)

Stafford Coming in. No problem.

Cernan No problem.

Stafford No problem on a high rate, 39 per cent O2.

CAP COM Houston, Roger.

Cernan ...garbled (cutting in and out)..foot forward
you've got the ELSS to get in here yet.

Stafford Ok, stand by.

CAP COM Ok, Tom, did you bring the EVA camera in?

Stafford Yes Neil, I've got it in.

CAP COM Ok, very good.

(garbling for 30 seconds)

Stafford It's really starting to fog now, Houston.

(cutting in and out for 45 seconds)

Stafford Ok, Houston I need some time this way.

Cernan ...face toward you.....I don't think you'll make
it that way.

This is Gemini Control Houston. While Stafford and Cernan are maneuvering as Gene returns to the cockpit we do know that Cernan has recovered the Extravehicular Activity Camera. He has passed that in to Stafford and its been stowed at 51 hours and 26 minutes now. The hatch has been opened for two hours and 4 minutes and as he approached the hatch Stafford again reported, based on a relay from Gene Cernan

that he was encountering even more fogging which reinforces the wisdom of the decision to conclude the activity without attempting the AMU. Meanwhile here in the Control Center we are working on a plan to separate the Astronaut Maneuvering Unit from the adapter section. It will not jettison or move off by itself. The spacecraft must perform a translation maneuver to move out in a way from the AMU. At 51 hours and 26 minutes let's go back and catch what conversation we can as the spacecraft moves on the far end of the Antigua acquisition area.

Stafford This ^{blooming} hatch is harder is harder to close than we thought it would be.

CAP COM Roger, you've got about five minutes until Antigua, LOS, Tom.

Stafford (Garbled)

Cernan of film

Stafford Ok, let it go.

END OF TAPE

S/Cgarble.....we'll get this hatch closed.

Next transmission garbled

STAFFORD I don't think I'd like to be with it now, would you?

CERNAN Put that lanyard outgarble

STAFFORD Okay, you sit down and take a rest.....garble

HOU Roger we got about three minutes yet and then it will be about eight minutes before RKV comes in.

S/C Rog.

This is Gemini Control Houston. We note as the two crew members were to make their final stowage thing and in preparation of closing the hatch, Cernan's heart rate has reached the highest point during his entire EVA period. It reached a peak of 180. We should lose signal at the Antigua Station - actually we're well beyond its range now. The next firm communication should come in about five minutes from the Rose Knot Victor. That acquisition is scheduled for 51 hours, 34 minutes. Crew is still apparently working - we just hear bits and pieces back and forth as they concentrate on this ingress procedure. We'll standby and monitor that conversation.

STAFFORD Okay Houston, we got the lox pressure

HOU That's the way to go Tom.

STAFFORD We're going to let the pressure go. We got thegarble.....up

RKV Don't do anymore

S/C OK.

CERNAN Is that it.

STAFFORD garble....we got the hatch locked.

This is Gemini Control Houston at 50 hours, 31 minutes into the flight. One minute ago at 50 hours, 30 minutes into the flight, Stafford reported "we have the hatch locked." They now are preparing to repressurize the cabin and will settle down for the remainder of this flight. We are still receiving some communication. It's a bit scratchy, at the far end of the Antigua area. We'll standby. This is Gemini Control.

STAFFORD Okay Houston, cabin pressure is back up.

HOU Houston copies.

END OF TAPE

This is Gemini Control Houston, 51 hours, 38 minutes into the flight. The Rose Knot Victor has acquired, there is a high back ground noise, something like a soaring airplane in the background but we could make out that the crew is going through the repressurization cycle. At last reading, the pressure in the cabin had built up to 3.13. They will continue to build now until something over 5 pounds. Stafford just noted they're up to 4 pounds. During the ingress procedure, Cernan reported that his visor again became completely fogged. We have no sound explanation for this. A guess or two coming from one of our staff support rooms in the back is perhaps that the suit did not take enough moisture out all of in view of Cernan's activities. Perhaps the suit failed to take away enough of the moisture which is one guess at what could cause the fogging. Stafford gave a quick summary on the EVA exercise by simply saying, "I think we've learned a lot." We have this conversation, we'll play it for you now.

RKV Gemini 9, RKV standing by.

S/C Roger, RKV.

RKV Is it hot up there, Tom?
(conversation garbled).

RKV Gemini 9, RKV standing by.

S/C Stafford Roger, RKV. Our cabin pressure is 2 PSI building up.

RKV Roger, copy.

S/C Stafford During the ingress maneuver, the pilot was completely fogged over.

RKV Roger.

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 11:18 a.m. Tape 165, Page 2

S/C Stafford He's still fogged over.

RKV Roger.

S/C Stafford(garbled)... hope you were smiling.

RKV Roger, we are.

S/C Stafford So are we, believe it or not. I think we've learned a lot.

RKV That's affirm.

S/C Cernan I'll tell you one thing, Tom.....(garbled).....
(garbled conversation).
.....I couldn't see anything, I only had the
sunlight on one side and my visor was so fogged
I couldn't see.....(garbled)....

HOU FLIGHT RKV Cap Com, Houston Flight.

RKV Flight, RKV Cap Com.
(garbled conversation)

RKV We'll check with him as soon as we get a chance
here.
him turn the

HOU FLIGHT Roger, have/ECSO2 manual heater on.

RKV Roger, we're noticing it going down.
(garbled)

RKV Gemini 9, RKV.

S/C Stafford RKV, Gemini 9. manual

RKV Roger, would you turn your ECSO 2 heater on?

S/C Stafford Roger.

RKV Cabin pressure 3.13.

HOU FLIGHT Roger.

RKV Tank pressure seems to be coming up all right,
Flight.

HOU FLIGHT Roger.

RKV(garbled)...about 815.

S/C RKV, Gemini 9.
We're up to 4 psi.

RKV Roger, copy.

S/C RKV, Gemini 9.

RKV Go, 9.

S/C You might ask Houston, whether or not they got
some D-14's for us. If they do, we'd better
take the first one and have a look at it be-
cause I broke off the antenna.

RKV Roger. Copy Flight?

HOU FLIGHT Understand, he says he broke off the D-14 antenna?

RKV That's affirmative.
We'll have LOS in about a minute.

HOU Gemini 9, Houston standing by.

S/C Roger, Houston. Our cabin pressure is up to 5.05.
Repeat information that Gene fogged over completely
during the ingress maneuver.

HOU Houston copies.

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 11:18 a.m. Tape 165, Page 4

S/C

Okay,....(garbled)...the cabin seal is good.

The ECS system is in good shape and we are getting all straightened away.

HOU

Houston copies.

This is Gemini Control in Houston. Although it might have been hard to decipher, we did deduce that the cabin pressure was up to 5.3 which is a normal cabin pressure. And apparently, things are settling down very nicely. The flight plan shows that for the next 45 minutes to an hour the crew will be engaged in stowing their chestpacks, stowing the umbilical, doing all of the post EVA functions. They are not quite as extensive as the four hour prep period before EVA but, more than an hour has been allotted here on the board for those kind of functions. Exactly one hour, as a matter of fact. We also do not yet have a precise time on when the AMU will be separated. We suspect that it will come along this afternoon a little later. It will involve both breaking loose the AMU from its fixed points at the adapter then the spacecraft will accelerate away from it. At 51 hours and 47 minutes into the flight, this is Gemini Control.

END OF TAPE

This Gemini Control Houston 52 hours 11 minutes into the flight. Carnarvon should acquire the spacecraft in approximately one minute. It will not be a long duration pass as the spacecraft is winging wide high and north and west of the Australia continents. Perhaps 30 seconds to 60 seconds communications at best. They have not yet acquired the signal. We expect fairly full discussion of the EVA maneuver over the Hawaii station and at more length during the stateside pass. This pass will take us down the West Coast of Mexico through the heart of South America. In the meantime we have checked with our ECCOM position here - electrical and environmental and communications - and he's passed on to us some times that he noted in his book - these may be revised later depending upon spacecraft records, onboard tapes, and the like. But his official logs showed the hatch opened at 49 hours, 21 minutes and 58 seconds elapsed time. That was 49 hours, 21 minutes, and 58 seconds - hatch open. Cernan was reported standing in his seat at 49 hours, 24 minutes and 7 seconds into the flight. Stafford reported the hatch was locked in place at 51 hours, 31 minutes, 00 seconds, 51 hours, 31 minutes - hatch locked in place and one minute later, 51 hours 32 seconds they reported the cabin was being repressurized. We still have no planned activities on the board this afternoon. We still expect that we will jettison the AMU in perhaps an hour and a half later, an hour to an hour and a half from now and perhaps additional experiments will be performed although we have no plan, as I say, at this time. At 52 hours, 13 minutes into the mission, this is Gemini Control. I am reminded we have a short and almost untelligible tape from the Tananarive Station, we'll play that for you now.

S/C (Garbled)

ASC Ascension has LOS

HOU Tananarive, go remote.

TAN Tananarive remote. Tananarive has acquisition.

HOU Gemini 9, Houston standing by, Tananarive.

S/C (Garbled)

HOU Okay, we're having trouble talking to you over this station again. We'll be standing by.

...you have an eat period for about the next hour.

S/C (Garbled)

Tan Tananarive has LOS.

END OF TAPE

CRO All the systems look good. I've got two event lights. How easy 06 and how easy 02 are both on and they've been on since acquisition.

HOU What are they, Bill?

CRO They're RCS ring A pitch up and down, but the rings aren't activated so I don't understand this.

HOU Probably hiscircuit breakers, maybe.

CRO Yeh, I'm thinking.

HOU Does the rest of the RCS look okay, Bill?

CRO Oh yeah.

HOU Okay, what are those measurements?

CRO That's how easy 06 which is ring A pitch up and how easy 02 which is ring A pitch down. And confirm to the back room.

HOU Okay.

CRO Carnarvon has LOS.

HOU Roger, Carnarvon. You're going to need your voice tape.

CRO Rog, thanks.

HOU Those two are on a common circuit breaker. The first one in the overhead circuit breaker panel so it sounds pretty reasonable to hit it.

CRO Yeah, I'm surprised it's the only one they hit.

HOU Carnarvon Cap Com, Houston Flight.

CRO Go ahead, Flight.

HOU Give us a status on Hotel Echo 01 and 05.

CRO Stand by one. Flight, Carnarvon.

HOU Go ahead, Carnarvon.

CRO We're going to roll the tape back and we'll
get you a readout.

HOU Okay. Bill, check those in your ground station.

CRO Roger, will do. Flight, Carnarvon.

HOU Go, Bill.

CRO Okay, all four parameters are on.

HOU Okay.

CRO I got that off the event recorder in the back room.

HOU Thank you. That's the way it should be and it is
the circuit breaker, Bill.

CRO Rog. I should have checked both of them. I
only read the left hand parameters.

HOU Okay.

AFD Hawaii, AFD.

HAW AFD, Hawaii.

AFD I want you to do three things. Check the RCS
Alpha one pitch circuit breaker closed.

HAW Roger, pitch one.

HOU Roger.

AFD Verify TM control switch, real time and acq aid.
Go to the experiment position on propellant

indicator selector switch and give reading on
H₂ O₂ pressure and temperature.

HAW Roger, I have it.

AFD I'll send you an MI and stand by and just
advise the crew that you have three things
for them to do.

HAW Roger. Hawaii has radar track and intermittent
TM.

HOU Roger, Hawaii.

HAW Gemini 9, Hawaii.

S/C Go ahead, Hawaii.

HAW We have three small items for you if you have
time.

S/C To write down?

HAW Negative.

S/C Okay, go ahead.

HAW We'd like for you to check RCS ring A number one
pitch circuit breaker. See if it's closed.

S/C It was open.

HAW Okay. I see it on the ground. And we'd like
to verify the TM switch is in the real time and
acq aid position.

S/C Okay, it's in real time and acq aid now.

HAW Roger. Would you go to the experiment position
on the propellant indicator switch and give us

a readout pressure and temperature on H_2O_2 .

S/C Okay. It looks we've banged a few switches around here. Reading 460 right now pressure and 65 degrees F temperature and our question is probably what you've been considering. Do you want us to get rid of it, or not?

HOU Tell him we'll talk to him over the states on that.

HAW They'll talk to you over the states on that.

S/C Okay. Any other circuit breakers we kicked around?

HAW We don't see any from here. Everything else looks real good.

S/C Okay, thank you.

HAW We'll be standing by.

S/C You can tell Houston they'll probably see our water consumption go up rapidly.

HAW Say again.

S/C You can tell Houston they'll probably see our water consumption go up rapidly.

HAW I don't doubt it.

S/C Hawaii, Gemini 9.

HAW Hawaii, go ahead.

S/C Roger, we'd like someone to give us an accurate readout on our latest propellant quantity, please?

HAW Roger.

HOU Tell them we'd like an onboard prop quantity reading.

HAW We'd like an onboard prop quantity readout.

S/C Okay, butI'd say four percent, maybe three.

HAW Roger. You copy, Flight?

HOU Affirmative. We're going to give them an update over the states on this whole batch.

HAW Gemini 9, Hawaii.

S/C Go.

HAW They'll be giving you an update on these quantities over the states.

S/C Roger.

HAW Gemini 9, Hawaii. We have one minute to LOS Stand by.

S/C Roger, Hawaii.

HAW Hawaii has LOS.

END OF TAPE

This is Gemini Control, 53 hours into the mission. Gemini 9 has just started its pass down over South America into the 34th revolution. We had considerable conversation this time while Gemini 9 was in range of the California, Guam, and Texas stations. We updated the flight plan some and we had some conversation about the EVA. We'll play those tapes for you now.

HOU California remote

CAL California remote

HOU Gemini 9, Houston

S/C Houston, Gemini 9, go

HOU Roger, Tom. We'd like to have from Gene the
- his best recollection of the configuration of
that AMU at the time he left it. That is, in
terms of connections, tether, arms, valves, and
so forth.

S/C Are you reading us ok. We're reading you garble.

HOU We're reading you loud and clear so go ahead.

S/C OK. I'm not sure all you asked for but when I
went back there, after I closed the hatch and I went
back over the top all the way down to the hand-rails...

HOU Standby

S/C Extend the EVA bars

HOU Standby

S/C The umbilical guard come over the back of the adapter
so I figured that they did not extend

HOU Standby

HOU You read it?

You read Houston?

S/C Houston are you reading?

HOU Yes, what we want to know Gene is the configuration of the AMU as it is now, right now, as best you know it.

S/C Okay. The AMU as it is now has a - the oxygen valve open, the hydrogen valve is open, on my gage I read 80 percent peroxide quantity. The battery switch is on.

HOU Okay, how about the arms and the tether?

S/C Houston, Gemini 9, your coming in broken.

HOU Roger. We got all that. We'd like to have the condition of the arms, the umbilical and the tether.

S/C The attitude control arm is up, it locked up. It's in the flight position a flyable position. The tether was discarded and its near the spacecraft.

HOU Roger.

Say again the position of the left arm.

S/C The left arm is down. Not in a locked position but all the way down.

HOU Roger, all the way down. Now how about the - any other electrical or hoses? Are they velcroed to the pack or are they loose or what?

S/C Chin hose is velcroed to the arm controller, the restrain harness on both sides is velcroed to the

S/C arm controller and the electrical connection I believe is **velcroed**. I think I got it back down but I cannot verify it.

HOU Roger, we got all that. Okay, for your information the - your onboard quantity indicates 20 pounds of fuel, the source pressure indicates 28 pounds of fuel, the ground equations indicate 35 pounds.

S/C Roger, we got that. Thank you

HOU OK. I've got a maneuver update when your ready to copy.

S/C Roger, Houston. We got that, is that fuel only or is that fuel and oxidizer?

HOU Fuel only.

S/C Roger. We'd like to do this orbit shaping to get your true anomaly in the right place if you'd agree with that.

S/C Roger. That sounds real good.

HOU Okay we'll have the - it when your ready to copy, I'll give it to you.

S/C OK. We need to do it right away?

HOU It'll be at 53:41.

S/C OK.

HOU That's about an hour from now over Tananarive.

S/C OK. We've got the platform all aligned here and we're in good shape . Standby. We'll copy it.

HOU OK. I can tell you first it's going to be a 25 foot per second burn. We'd like to make - monitor - have you monitor your VW tank, your reserve tank, during the burn. If it starts to go down, you stop your burn at that point.

S/C Shoot for 25 foot per second, if the VW tank starts down, we'll stop the burn.

HOU That's right and let us know how many feet per second you burned.

S/C Roger

HOU Guaymas remote
California local

GYM Guaymas remote

CAL California local

S/C Go ahead with the GET.

HOU OK. GETB 53 41 35, delta V 25, burn time 31 seconds, yaw 180, pitch zero, address 25 90 250, address 26 zips, address 27 zips, aft thrusters, retrograde.
Go ahead.

S/C Roger. GET of burn 53 41 35, delta v 25 feet per second, delta t 31 seconds burn time, yaw 180, pitch zero, address 25 90 250, 26 and 27 zips, aft thrusters, retrograde maneuver.

HOU That is correct and you can turn your cross feed on.

S/C Cross feed coming open

HOU Our current approach is not to jettison AMU unless we feel for some reason we'll have to.

S/C Roger. We were going to ask you about that. What is your recommendation?

HOU Well we're sure going to keep it for awhile. We want to watch these pressures and I'm sure you'll be watching them too.

S/C Roger.
I think we learned a whole lot out of the EVA. It was a real worth while exercise.

HOU Yes, we certainly agree with that.

S/C Wish you'd have gotten some data there on the previous one.

HOU Say again.

S/C I said I wish you and Dave had been able to get us some data on the previous one.

HOU Yea, but it looks like you got a lot of the data we would have got.

S/C Yea.
I think it was still a real good - a real fine exercise. We hated to give up the AMU portion of it but we did do some good umbilical evaluation and I got some pictures. We also had a lot of verbal inputs to give back to the people.

HOU Yea, we can see that it is very valuable. Hey Gino the EVA bottle is empty.

S/C Thanks a lot. Thanks a lot Dick. Still batting 500 Dick but a lot smarter.

HOU You did good work friend.

S/C You don't know how much.

HOU Yes I do. I was watching you, the surgeon told me.

S/C Houston, Gemini 9. Can you give us a time hack
please?

HOU Roger. It'll be 52:45 MARK.

S/C Right on

HOU Texas remote
Guaymas local

HOU OK Tom, we're expecting this AMU pressure to go up
and it may go up over 500 and its conceivable that
you could get a light here sometime along the way.

S/C OK. We'll keep a close look on it Neil.

HOU OK, we're going to be thinking about this some more
on the ground here.

S/C Roger.

HOU Looks like Tom that we are not planning to jettison
the AMU even if that light does come on. However,
in the configuration you have it we don't see any
reason why we won't be able to jettison it if for
some reason we have to.

S/C Roger.

HOU Houston's about a minute from LOS.

S/C Roger Neil.
We'll be set up and we'll make the burn according
to instructions.

HOU Right. Guidance down here thinks you made a real good show there Gino.

S/C Like I said, I'm still only **batting** 500 but thats better then nothing.

HOU We're with you.

S/C Ask Dick if he don't think I need some ballet lessons?

HOU (Laugh) Do you want me to give them to you?

S/C Not exactly.

HOU Texas local

This is Gemini Control, 53 hours, 10 minutes into the flight.

This orbit shaping maneuver that you heard Cap Com Neil Armstrong pass up to Tom Stafford is a maneuver that is designed to pull the apogee down about 10 to 12 miles. This will make retrofire dispersion less sensitive and it will allow better control during the reentry. The VW tank that you heard them talking about is an auxillary fuel tank, holds 12 pounds of fuel. If he starts to get into this tank during the burn he will quit burning at that time. This is Gemini Control, 53 hours and 11 minutes into the flight.

END OF TAPE

This is Gemini Control at 54:23 into the flight. Gemini IX has come within range of the Guaymas station for a very short pass there and we intend to just stand by. On the pass just completed at Hawaii we updated the flight plan for the crew, and on the pass of the CSQ prior to that we got a report of the maneuver. Tom Stafford says he did complete it on time, and he hit the reserve tank just as it was completed. The crew is tracking the ATDA. Their last report was that they were 164.72 miles ahead of the ATDA. Their range rate was 51 ft per sec and they were opening. We have the tape now from this start of the 34th revolution done at the Rose Knot. We'll start there and go thru Hawaii.

AFD RKV CapCom, AFD.. fuel cell purge, OBC sum, and your
MI should be getting there shortly on the ATDA.

RKV Roge

S/C Ok RKV, I'm with you now. Do you want section one
first? first?

RKV That's affirm.

S/C Ok..purging hydrogen in section one

RKV Roger

S/C Purging hydrogen in section two

RKV Roger

S/C been looking real good up here, how they been
looking down there?

RKV They're running real beautiful down here, this is the
(S/C cut in on conversation)

S/C We're on the oxygen purge, section one.

RKV Roger.

S/C Yeah, they been holding real well here, voltages have
been holding nice, currents have been very well bal-
anced.

RKV Yeah, I never saw one before that ran this close
 one the currents, they're really in there.

HOU RKV .. Flight

RKV Go ahead flight

HOU One more thing we'd like to get while the crew is
 there is the watergun count.

RKV Gemini IX, would you give us a watergun count please?

S/C Watergun Tananarive 2706

RKV Roger. Copy 2706

S/C We're starting on this ATDA command sequence.
 We're now purging hydrogen section 2

RKV Roger. We're right with you. Just for your infor-
 mation, we turned the L band beacon off on the ATDA
 we also turned the acq lights on, on the ATDA and we're
 pretty well powering the ATDA up.

S/C Roger. Could you give us any idea where it is in rel-
 ation to us, or where it will be after our burn?

RKV Roger. Stand by. The last information we had here on
 the ground, Houston's gonna get a better look at it,
 was that it would be at a slightly higher orbit than
 what you are in. It was about 185 miles away.

S/C OK. Thank you.

RKV Would you place the quantity read switch to the fuel
 cell 02 position?

S/C OK. Fuel cell 02

HOU RKV, flight

RKV Go, flight

HOU ATDA is 160 miles behind the s/c.

RKV Flight just advised that the ATDA is 160 miles behind you.

S/C Roger. And the transponder's on?

RKV That's affirm

S/C Ok. We'll do a little interrogating here.

RKV Ok Roger. We notice you have ...garble...on.
Would you give us fuel cell H2 quantity please?

S/C Fuel cell H2.

RKV OK. You can go back to ECS 02.

S/C ECS 02

RKV Roger. You can even turn it off if you want to, or you can leave it.

S/C Hows our hydrogen quantity holding up?

RKV Our ...garble...has failed and we're not getting any indication down here on the ground on it.
OK flight...we've had LOS and LOS with the ATDA.

HOU Gemini 9, this is Houston, how do you read?

S/C We read you loud and clear

HOU Gene, your coming very garbled. I've got some dope for you though, your H2 quantity is around 40 to 46%, that is OK, we're getting a flight plan update ready and we'll send it up at Hawaii. Over

S/C Roger. Understand .

HOU CSQ CapCom, Flight. How do you read?

CSQ I can read you weak but readable.

HOU OK. The things we're interested in over your pass

HOU will be a summary of how the maneuver went, how t
the OAMS fuel guage is reading on board, and if Tom
makes any comments on whether the VW tank budged or
not. The other thing we'd like to get is at least
three main summaries while we're over your site.

CSQ Three mains?

HOU Affirmative.

CSQ Roger.

END OF TAPE

CSQ We show the Gemini as go. We have one parameter we are checking out in the back room on the right suit inlet temperature.

HOU Roger.

CSQ Gemini 9, CSQ Cap Com.

S/C Go ahead, CSQ

CSQ Roger, have you completed your maneuver?

S/C Roger, the maneuver was completed on time we hit the OAMS reserves tank just as it was just as it was completed. (Garbled) take out the residuals since it was the last burn.

CSQ Roger, understand. Could you give me an OAMS prop quantity reading please?

S/C OAMs prop reading indicates zero.

CSQ Roger, would you give me your OAMS reserve tank pressure.

S/C Roger....indicated zero.

CSQ Roger, would you give me your OAMS reserve tank pressure.

S/C Roger, we have 295.

CSQ Roger, understand. We have nothing further for you at this time.

S/C CSQ, Gemini 9.

CSQ Go ahead, Gemini 9, this is CSQ.

S/C The residuals on that burn were address 80 minus

S/C 0013.

CSQ Roger.

S/C 81 is 00006. 82 is 00022.

CSQ Okay, would you give me an address 81 please?

S/C Roger, 81 was 0006.

CSQ Roger, understand. I copy.

S/C And just- there was a complete burn. There was a definite indication that the OAMS regulated pressure was dropping. It dropped to about 285 to 290 and now it is up again to 290.

CSQ Roger, understand.

S/C CSQ, Gemini 9. Expecting a flight plan update Hawaii.

CSQ That is affirmative, Gemini 9.

S/C Roger. (Garbled)

CSQ Houston Flight, CSQ Cap Com.

Flight, CSQ.

HOU Go ahead, CSQ.

CSQ Okay, November Bravo 07 right hand suit inlet temperature is reading off scale

HOU Roger, we are reading it okay back here, Buck.

CSQ Roger, understand. Did you copy all the other information?

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 2:13 PM TAPE 17OPAGE 3

HOU Affirmative

CSQ Gemini 9, CSQ.

C/S We have been reading the L-Band on the ATDA for about 10 minutes, the range rate is very slow. We were opening prior to our burn then we started to close very slowly and we are presently at 162.75 miles with range rate of plus 26 feet per second.

CSQ Roger, understand

S/C The lock on is pretty slow and occasionally it drops out but it looks like a pretty good lock on.

CSQ Roger.

S/C Prior to LOS I will give you another range and range rate, if you like.

CSQ Roger.

CSQ Hello Flight. We have about an 85 heart rate on the pilot at this time.

HOU Say again.

CSQ The heart beat on the pilot is about 85.

HOU Roger.

S/C Gemini 9. On my mark would me your range and range rate please.

CSQ Gemini 9, roger.

S/C Mark

CSQ Gemini 9 on your mark, range was 164.72 miles.

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 2:13 PM TAPE 170 PAGE 4

CSQ Range rate is 51 feet per second

C/S 51 feet per second.

HOU Roger, understand.

CSQ Okay, you are just about to leave us here, Gemini
9 we show you as go as you are going over the hill.

S/C Roger.

CSQ CSQ has LOS both vehicles.

HOU Roger, CSQ.

CSQ I am going to have to break down my tape a
little bit, Flight. It may take a while.

HOU Break down your tape for what, Buck[?]

CSQ Make sure I got all the information they passed
to me.

HOU Okay.

CSQ We will get you in addition to the post...
probably have some of it on there.

HOU That will be fine.

Hawaii, Flight, Hawaii, Flight

HAW Hawaii, Flight.

HOU Did you get your MI?

HAW Roger.

HOU Okay, one more thing we would ask the crew to do
is get a report here if they have some extra film
to also take some pictures of South America coast
line, weather, things like that. If they get a
chance.

HAW Roger.
AFD, Hawaii.

AFD AFD, go ahead, Hawaii.

HAW Okay, on this last MI, I have got a question.

AFD Okay.

HAW What is NADIR.

AFD Nadir?

HAW Roger.

AFD That is correct, huh?

HAW That is affirmative.

AFD Nadar.

HAW Thank you.

AFD Roger.

AFD Hawaii Cap Com, AFD

HAW AFD, Hawaii.

AFD Nadar stands for straight down.

HAW Thank you.

AFD Roger.

HAW We have radar track and initial contract on TN.
Gemini 9, Hawaii.

S/C Hello Hawaii, Gemini 9.

HAW Roger, I have a flight plan update for you.

S/C Roger, be ready to copy in one minutes.

HAW Roger.

S/C Hawaii, Gemini 9, go.

HAW Roger. 54 38 34 through 54 47 28 photograph

HAW South America, 70 mm Hasselblad, 80 mm lens,
strip shot. Weather and film permitting. These
should be nadar photographed.

S/C Roger.

HAW 55 30 - stand by, 54 57 00 this is an F-1, start
with Milky Way exposures take two exposures of
each of the four horizons, starting north, then
west, south and east. 55 30 00 load re-entry
module tape. Then power down except for rate
gyros.

HOU Hawaii, Flight.

HAW Stand by Gemini 9. Go, Flight.

HOU We would like to do that re-entry loading over
your site, so it will be about 20 minutes later
than that.

HAW Roger. Gemini 9, Hawaii. That time for loading
the re-entry module should be approximately
55 46 37. That will be Hawaii acquisition on
the next rev. Also over Hawaii on the next rev
at 55 46 18 crew status report. S-11 56 49 17
sequence 02 southern horizon only. Use Acknar for
yaw attitude. CSQ 57 04 02 PLA update. RKV 58 00
00. Purge fuel cells and cryo quantity read out.
57 30 00 through 58 30 00 eat period. 58 30 00
through 66 30 00 sleep period.

END OF TAPE

HAW

.....66 30 through 67 30 00 eat period.

66 38 52 over Carnarvon, purge fuel cells

cryo quantity readout. That's all.

S/C Stafford

Roger, Hawaii, could you give us the first

times for the South America strip chart?

HAW

Roger, 54 38 34 through 54 47 28.

S/C Stafford

Roger.

HAW

We'd also like for you to think about the

weight update of the spacecraft at this time

that

such items ~~of~~ you have jettisoned and the

amount of the O2 and the ELSS and such as

this.

has

S/C Stafford

Roger. ELSS ~~is~~ approximately one pound of

oxygen left in it.

HAW

Roger.

S/C

And the jettison ejector was estimated to be

approximately two pounds.

jettisoned

HAW

The number of items/should add up to around

two pounds?

S/C

That's affirm, that's internal from the space-

craft and of course, there was S-12 fairing and

the.....

HAW

Roger, I copy.

S/C

Hawaii, Gemini 9.

HAW

Gemini 9, Hawaii.

S/C I'd like to give you a status of that D-14 antenna.

HAW Okay.

S/C Okay, I broke it about two thirds of the way down, I actually broke the case and it seemed to semi-snap back in place. Apparently, there is a cable or a line through it. Its not a spring-loaded like the UHF nose antenna. It may or may not work, I don't know whether you want to try it.

HAW I believe they cancelled the rest of the D-14 experiment.

S/C Okay.

HAW We're at LOS minus one, Gemini 9.

AFD Hawaii Cap Com, AFD, Gemini LOS main please?

HAW Roger, It's on its way, we just had LOS.

AFD Roger.

END OF TAPE

This is Gemini Control at 55 hours into the mission. Gemini 9 is just coming up on the west coast of South Africa. Gemini 9 is in the night side of its 35th revolution and the crew is now conducting the S-1 experiment. This is the zodiacal light photography. They did complete the photography over South America and the Rose Knot tracking ship has a brief conversation with the spacecraft as it passed over that station which we'll play for you now.

RKV Gemini 9, your spacecraft is go. Gemini 9,
RKV standing by.

S/C Roger, RKV.....

RKV Roger.

HOU RKV, Houston Flight.

RKV Go, Flight.

HOU You might mention to the crew that we have
to transfer four pounds of water to the water
boiler. That's 132 count and we would like
to start that over the CSQ on this pass coming
up.

RKV Okay, you want to transfer four pounds of
water to the water boiler, is that correct?

HOU That's correct.

RKV Over the CSQ?

HOU Starting at the CSQ, yeah.

RKV Oh, roger. I'd like to have you transfer
about four pounds of water to the water boiler

- 3 to 4 pounds - and start that over the
CSQ.

S/C Four pounds of water to the water boiler.

RKV 134.

S/C 134.

RKV That's affirmative.

HOU RKV, that's 132 count.

RKV Correction on that, Gemini 9, it's 132 count.

S/C RKV, this is Gemini 9. We'll start drinking
quite a bit here soon.

RKV Roger.

S/C You want 134 - 132 from what we have now.

RKV That's affirmative. Gemini 9, RKV.

....minutes to LOS.

END OF TAPE

This is Gemini Control at 55 hours, 10 minutes into the flight. Gemini 9 is passing over the east coast of Madagascar within range of the Tananarive station. Houston's spacecraft communicator, Jim Lovell put in a call to the spacecraft a little bit ago. Tom Stafford came back and advised that he was in the middle of an S-1 experiment, so we will not attempt to contact the crew during this pass. We'll wait until we acquire at the CSQ in the Western Pacific. This is Gemini Control.

END OF TAPE

This is Gemini Control, 55 hours and 40 minutes into the flight.

Gemini 9 has just completed a pass over the Coastal Sentry tracking ship. We'll play that tape for you now.

HOU Tananarive go remote

TAN Tananarive remote

HOU Gemini 9, Houston

S/C Roger Houston. We're in the middle of an S-1 photograph right now.

HOU We have a loading module procedure for you if you're ready to copy. Over.

S/C Standby a minute we're still on the experiment S-1

HOU This is Houston standing by, we'll send the procedure at CSQ.

S/C Roger

TAN Tananarive has LOS

HOU CSQ Cap Com AFD

CSQ AFD, CSQ Cap Com

HOU CSQ Cap Com AFD

CSQ AFD, CSQ Cap Com, how do you read?

HOU Read you loud and clear. Did you receive all your MI's?

CSQ (garbled)

HOU You faded out CSQ

CSQ I have all my MI's, that is affirmative

HOU Roger. Any questions?

CSQ Negative. I assume that this earlier AP unloading procedure is by the board. Is that affirm?

HOU Say again.

CSQ This new reloading procedure is replacing the old one that we had, right?

HOU That's affirmative

They are quite similar with just a few changes.

CSQ Roger, I noticed

HOU CSQ Cap Com, AFD

CSQ Go AFD

HOU Did you receive the MI changing the power down at module tape loading from your site to Hawaii?

CSQ Roger. You pass that to - up to them on rev 34, is that affirm?

HOU That was passed to the crew by Hawaii at rev 34 during the flight plan update.

CSQ Roger, understand

HOU Okay standing by for you CSQ.

CSQ Roger.

CSQ CSQ has TM solid, Gemini.. Shows vehicle is GO.

CSQ Gemini 9, CSQ Cap Com

S/C CSQ, Gemini 9. We're loading water into the water bottle.

CSQ Roger. Could you give me the gun count prior to the start?

S/C Yes it was 27

CSQ Roger and that's a 132 gun count

S/C Roger. When they told /^{us}that we started at 2715, we drank quite a bit, we're now at 2747. We're going down to 2847.

CSQ Roger, understand. I have a module 4 loading procedure for you, when your ready to copy.

S/C OK.. We'llthis and load the water bottle right now.

CSQ Roger understand.

S/C Is this procedure different from ordinary, we know the regular procedure and have it on board.

CSQ Roger, this is a new procedure, Gemini 9.

S/C Okay, CSQ go ahead

CSQ This is step one switch to catch up lode, verify IVI's do not drive. Step two set small numbers in IVI's. Step three insert into the MDIU address 25 all zips, address 26 all zips, address 27 all zips. Step four push start comp,IVI's should read zero. Five switch to prelaunch. Step six at 55 46 00 load module 4 by the ATM automatic.Step seven switch to reentry mode. Step eight verify computer run light stays off. Step nine switch to prelaunch. Did you copy?

S/C Roger. Repeat step eight please.

CSQ Step eight verify computer run light stays off.

S/C Roger. I'd like to read them back to you real quick.

CSQ Go

S/C Number 1 - switch to catch up mode, verify IVI's do not drive. Set small numbers in IVI's. Set 25, 6, and 7 are all zeroes, Step 4 is push start comp, IVI's at zero. Step 5 prelaunch, 55 46 00 load module 4 in the automatic. Step 7 switch to reentry mode, verify comp light is off and step 9 switch to prelaunch.

CSQ That's affirmative and if you have time I have a flight plan update.

S/C Go ahead with the flight plan update and if we have any anomalies prior to step 6 should we continue or not.

CSQ Standby one.

CSQ Houston Flight, CSQ

HOU Standby we're checking on it.

We'd like to know what the anomaly is before we proceed past step 6.

CSQ Gemini 9 he would like to know what the anomaly is before preceeding.

S/C Roger understand. Go ahead with the update.

CSQ Roger. Title CSQ at 57 04 00. Computer prelaunch for 46-1. PR and computer update. Did you copy?

S/C Roger. Copied. CSQ at 57 04 00, computer prelaunch for 46-1, PR and computer update.

CSQ That is affirmative

 We have nothing further for you at this time. We
 show you as go.

S/C Roger. One question, this procedure prior to loading
 the normal weights on the ATM is about the comp start
 distance that we had the other day?

CSQ That is correct. That is affirmative.

S/C OK thank you

HOU OK CSQ sounds good. How does everything look on the
 ground?

CSQ Everything on the ground is GO.

HOU OK.

S/C CSQ this is Gemini 9

CSQ Go niner

S/C Question on step one. Do they want me to insert the
 small numbers in the IVI's when I go to catch up?

CSQ Standby

CSQ Houston Flight, CSQ

HOU Go ahead

CSQ Did you copy his transmission?

HOU Yes we want to insert small numbers in the IVI's and
 then see if they go to zero.

CSQ Roger

CSQ Roger, you want to set small numbers in the IVI's to
 see if they'll go to zero.

S/C Roger. They do go to zero. Understand you want me to

verify that they do not dry.

CSQ That is affirmative.

S/C OK then we've got an anomaly right there.

CSQ Standby

CSQ Did you copy Flight?

I think he's confused on the step one and step two,
he's getting them confused. Shall I tell him that?

HOU Standby a minute.

CSQ We're having dropout Flight.

CSQ We're getting to LOS

CSQ CSQ has LOS Gemini

END OF TAPE

GEMINI 9A, (2) MISSION COMMENTARY, 6/5/66, 3:40 p.m. Tape 175, Page 1

This is Gemini Control at 56 hours into the flight. Gemini 9, a few minutes ago, passed out of range of the Hawaii station, is now swinging down toward the Equator between Hawaii and South America. During the Hawaii pass, we did get a crew status report and Gene Cernan loaded the computer with the reentry module tape. Here's the playback of the Hawaii pass now.

HAW Gemini 9, Hawaii.

S/C Go, Hawaii.

HAW Rober, have either of you started on your oral temperature yet?

S/C That's affirm.

HAW Roger. I have a little change to that ATM loading procedure, if you'd like to copy?

S/C Go ahead.

HAW Okay, we'd just like for you to go to the catch up mode on the computer and then pick^{up} the sequence you already have at number 3.

S/C Roger, understand.

HAW Okay, he's in the catch up mode now and evidently they're going through the procedure. We're getting oral temperature on both of them at this time.

HOU FLIGHT Roger.

HAW Gemini 9 Pilot, we have a good temperature on you.

S/C Gemini 9, Roger, and I'm starting on step 6 of loading the ATM.

HAW Roger. We've been following you down here. You're looking okay at this time.

S/C Cernan Affirmative, everything's go and we'll get you the rest of the crew status as soon as the pilot can talk -- correction -- command pilot.

HAW Roger, understand.

Okay, we have a good temperature on the command pilot.

S/C Stafford Hawaii, Gemini 9, water now at 2764 and we'll continue drinking and dumping it until we have 2847 on the gage.

HAW Roger, you have 2764 at this time, you will continue until 2847.

S/C Stafford Roger, that's to give us that 132 ounces.

HAW Roger. Have you both been drinking about the same? Or is one of you thirster than the other?

S/C Stafford Gene has had about three times now since EVA.

HAW About three times as much since EVA?

S/C Stafford Rog. We've each had one meal today and we're working on the second one.

HAW Roger. How do you feel today, compared with yesterday when you decided to delay the EVA until today? As far as tiredness and physical feeling?

S/C Stafford Roger, we feel about twice as good. We' both felt a little drowsy yesterday.

HAW Roger, understand.

S/C Hawaii, it appears that module 4 Alpha is going in.

HAW Roger.
Flight, Hawaii, he's loading the tape at this time.

HOU FLIGHT Roger, Hawaii, we copy.

HAW As he announces he has completed loading it, we'll send you another OBC.

HOU FLIGHT Okay. Send us a couple during that time.

HAW Okay, we've sent about three already.

HOU FLIGHT That's fine.

HAW Gemini 9, Hawaii.

S/C Go Hawaii.

HAW Okay, I've got a small flight plan update for you, if you're ready to copy.

S/C Go ahead.

HAW Node 55 18 51, Rev 35 77.0 degrees east right Ascension, 19 hours 01 minutes.

S/C Roger, we got the node 55 18 51, Rev 35 77.degrees east we're at Ascension 19 hours 01 minute.

HAW Roger, that's affirmative.
Houston, Hawaii, our 1218 has faulted.

HOU FLIGHT Procedures copy.

HAW Gemini 9, Hawaii, we have one minute before LOS.

S/C Gemini 9, Roger.

HAW Hawaii has LOS.

S/C Gemini 9 module 4 Alpha has been loaded and ...
(garbled).....

GEMINI 9A (2) MISSION COMMENTARY, 6/5/66, 3:40 p.m. Tape 175, Page 4

HAW Flight, Hawaii.

HOU FLIGHT Go, Hawaii.

HAW Roger, Just as he was going over the hill he said module 4 A had been loaded but it sounded like he said a few more words after that but he faded out.

HOU FLIGHT Yes, that's just the way I read it too, Jerry. He said loaded and he faded out.

HAW Rog.

END OF TAPE

This is Gemini Control, 56 hours, 40 minutes into the flight. And Gemini 9 is over South Africa on its 36th revolution. We're in the night side of this revolution and Tom Stafford and Gene Cernan are conducting the S-11 airglow horizon photography experiment at this time. In the Control Center we've just activated the time to retrofire clock. It shows we're 15 hours, 5 minutes, 46 seconds away from retrofire. This is Gemini Control.

This is Gemini Control. We have a brief tape from the pass over the Rose Knot Tracking ship. We'll play that for you now.

HOU RKV, Flight.

RKV Go ahead, RKV.

HOU Got everything you need for this pass?

RKV Oh, roger.

HOU Standing by.

RKV Roger, we have about 20 seconds to go.

HOU He's probably going to tell you how the module loading went.

RKV We have Gemini TM solid.....

HOU RKV, would you go with experiment's position and give us a read out on the hydrogen peroxide pressure and temperature, please.

S/C Roger, we're there now and it is 60 degrees and 480 psi.

RKV Roger, copy. 60 degrees, 480 psi.

S/C That's affirm and the ATM, the computer is loaded. It has been verified with 4 Bravo. He has verified the temperature - it's been verified with four Alpha and

RKV Roger.

S/C All procedures checked out.

RKV Roger.

HOU Roger, he's looking good from down here.
We have nothing further for you.

S/C Roger, thank you.

RKV RKV has about one minute to LOS.

HOU Say again, RKV.

RKV Roger.....we have a minute to go to LOS.

... And they roger'd on up.

RKV We've had LOS on Gemini.

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 4:40 PM TAPE 177 PAGE 1

This is Gemini Control, 57 hours into the flight. Gemini 9 is over Burma, not quite within the acquisition range of the Coastal Sentry. There was a very brief conversation at Tananarive and we will play that tape for you now.

HOU Gemini 9, Gemini 9, this is Houston at Tananarive. We are standing by and we have nothing for you this pass.

S/C Roger,...(garbled)

HOU Roger.

S/C Roger....(garbled)

HOU Finally. Gemini 9, this is Houston we have one minute until LOS. Have a good night's sleep and real good show, Gene.

S/C What was the last transmission, please?

HOU Roger, we have one minute to LOS. Have a good night's sleep and a real good show, Gene.

S/C Roger, (garbled)

TAN Tananarive has LOS.

END OF TAPE

This is Gemini Control, 57 hours and 11 minutes into the flight. Fourteen hours and 35 minutes away from retrofire. Gemini 9 is over the Western Pacific within range of the Coastal Sentry tracking ship. The spacecraft communicator aboard the CSQ has been updating the crew with information for the 46-1 landing area. We'll play back this pass from the start now.

CSQ CSQ has TM solid Gemini. Show the vehicle as GO

HOU Roger CSQ

CSQ Gemini 9, CSQ Cap Com

S/C CSQ Gemini 9, Go

CSQ Roger, I have a new TR time for you.

S/C Go

CSQ Roger. Transmitting TR

CSQ Your in sync Gemini 9

S/C Gemini 9 is counting down and I'm ready to copy your PLA

CSQ Roger. I have a load to transmit.

You are in sync.

Standby for load

MARK

S/C Load is received

CSQ Roger. We've identified on the ground that your load is good. Standby for a pad message. Area 46-1 GETRC 71 46 47, REP 400K, 19 plus (garble)

CSQ Gemini 9 CSQ Cap Com

S/C Go CSQ

CSQ Area 46-1, GETRC 71 46 47, RET 400K, 19 + 49, RETRB
26 + 09, take a left 50, take right 60. Do you
copy?

S/C Roger 46-1, GETRC 71 46 47, 400K at 19 + 49,
first bank at 26 + 09, take left 50, bank right 60.

CSQ Roger, MDIU quantities
Core -03-63 906, core 04-349 67, core 65-01 76 66
core 66-34 74 3, core 07-65 41 7, core 08-40 83 3,
core 09-15 29 4, core 10-02 75 6, core 11-28 50 0.
Did you copy.

S/C This is Gemini niner. Roger got them all and I'll
check them. If there's any anomaly I'll check
that.

CSQ Roger. Understand. I have your PLA update for you.
Would like for you to stay in a prelaunch mode
until we tell you to switch.
Are you ready for the PLA?

S/C Go

CSQ Area 38-3, 59 54 46, RET 400K, 19 + 20, 25 + 27,
area 39 delta 60 49 43, 20 + 53, 23 + 56,
area 40-2, 62to 36, 20 + 42, 25 + 31,
area 41-2, 63 59 27, 20 + 27, 25 + 17,
area 42-2, 65 35 27, 20 + 15, 25 + 09,
area 43-2, 67 11 08, 20 + 04, 25 + 26,
area 44-1, 68 37 08, 20 + 10, 25 + 22,
area 45-1, 70 11 51, 20 + 03, 25 + 32

bank angles for all areas, roll left 85, roll right
95. Weather in all areas good. Sep maneuvers none.
Did you copy?

CSQ Flight CSQ Cap Com.

HOU Go ahead

CSQ I don't know how much I got into him Flight on the
PLA update. We had LOS

HOU OK we'll check it at Hawaii

CSQ Roger his TR clock was in sync

HOU And you got the load in?

CSQ We got the load in and even the MDIU print-out
and we checked it with the DCS and everything checked
out okay.

HOU Roger. Did you notice anything on the spacecraft?
Everything looks all right.

CSQ Everything on the spacecraft looked good as it
went over the hill.

HOU Roger.

END OF TAPE

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 5:20 PM TAPE 179 PAGE 1

This is Gemini Control, 57 hours 40 minutes into the flight and Gemini 9 is over the South Pacific about mid-way between Hawaii and South America nearing the end of the 36th revolution. Over Hawaii, the spacecraft communicator completed passing up the landing area updates and he gave the crew the latest orbital figures. Gemini 9's apogee is 157.5 nautical miles. Its perigee 145.6 nautical miles. We will play the tape of the Hawaii pass for you now.

HAW Hawaii has intermittent TM and intermittent C-Band.

HOU Roger, Hawaii.

S/C Hawaii, Gemini 9.

HAW Gemini 9, Hawaii.

S/C Roger, setting here going over the basic flight.

What is the latest (garbled)

HOU Stand by and I will get the latest.

S/C Gemini 9, also did not receive anything after 43-2 from CSQ.

HOU Roger, I have the rest of that for you.

The spacecraft has an apogee of 157.5 and a perigee of 145.6.

HAW Gemini 9, Hawaii. Okay, your apogee 157.5, perigee 145.6.

S/C Roger.

HAW Okay, did you get all of 43-2?

S/C Roger, got all of 43-2.

HAW Roger, stand by for - I have two more items.

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 5:20 PM TAPE 179 PAGE 2

HAW 44-1, 683708 two zero plus one zero 25 plus 22
and all the bank angles are rollleft 85, roll right
95. The weather is good in all areas and there
is no SEP maneuver. 45-1 701151 200 plus 03 25
plus 32 and that is all.

S/C Was that 45-1?

HAW Roger, that was 45-1.

S/C Okay, we got them all and got the bank angles
and weather, thank you.

HAW Roger.

S/C How long would you like us to leave the computer
on?

HAW Stand by. Do you want them to go ahead and power
down the computer, Flight?

HOU Hawaii, Houston Flight.

HAW Go, Flight.

HOU We are ready to power it all down.

HAW Roger. Gemini 9, Hawaii. You can go ahead and
complete the power down.

S/C Roger.

HOU Why don't you get an OBC to him, Hawaii?

HAW It is on its way Flight.

HOU Okay.

HAW Flight, Hawaii.

HOU Go.

HAW Okay, we confirm less than 1/8th separation in
this TR time.

HOU Roger.

GEMINI 9A(2) MISSION COMMENTARY, 6/5/66, 5:20 PM TAPE 179 PAGE 3

HAW Flight, Hawaii.

HOU Go, Hawaii.

HAW Okay, we confirm CSQ's report on the MDIU's read
out. We check also.

HOU Okay, fine.

HAW Gemini 9, Hawaii, we have one minute to LOS.
Standing by.

S/C Roger, thank you very much Hawaii. See you in
the morning, I guess.

HAW Roger, we will be looking for you.
Hawaii has LOS.

HOU Roger, Hawaii and it looks like that is all for
today for you, Jack.

HAW Roger, thank you.

HOU See you in the morning.

HAW Roger.

HOU Good night.

HAW Okay.

END OF TAPE

This is Gemini Control at 58 hours 12 minutes into the flight. Gemini 9 is just passing over the west coast of Africa in its 37th revolution. Tom Stafford and Gene Cernan are just about to wind up the time set aside for their evening meal and at 58 hours 30 minutes elapsed time will begin an eight hour sleep period. This last pass over the Rose Knot Tracking ship off the coast of South America will be the last time we will attempt voice communications with the crew this evening. We will not attempt to disturb them during the sleep period. Although we will continue to monitor the systems on the Gemini 9. We have a tape of that pass and we will play that for you now.

RKV Gemini 9, RKV Cap Com.

S/C RKV....

RKV Roger, we would like to get this fuel cell purge started and we would like to start with section 2.

9 RKV, we would like to get an onboard reading of the hydrogen peroxide pressure and temperature.

S/C Roger, stand by. Hydrogen peroxide pressure is 48, temperature is 64 degrees.

RKV Roger, copy 48 and 64 degrees.

Okay we would like to have you turn your tape recorder power circuit breaker to the open position.

S/C On.

RKV And we would like to get a from you Gemini 9 on that 132 ounce of water. Did you drink any of it. Do you know how or how much you drank

RKV of it?

S/C Roger, we drank out of 132, we drank a good 70 of it.

RKV Roger, copy 70.

HOU RKV, is that equally between the two?

RKV Say again, Flight.

HOU Is that 70 about equal between the two pilots?

RKV I will check. 9, RKV. I would like to know if that was an equal amount between the both of you .

S/C Roger, that was about equal between the two of us.

HOU Roger, thank you.

RKV Okay, as soon as we get these fuel cells purged we will get a ... quantity read out and we will put you to bed and let you sleep the rest of the night.

S/C All right. Sounds good. We are still dictating on paper about the EVA activity and also the rendezvous.

RKV Roger.

Flight, RKV.

HOU Go ahead.

RKV Okay, in the pump configuration he is on A pump in the primary mode and B pump in the secondary.

HOU Okay. Thank you.

Flight, I think we might suggest to him to also go to the B pump and the primary loop. We are showing that the temperatures have already started

RKV coming down almost feasibly on the ECS control valves. I imagine it will get pretty cold in there before long.

HOU Okay, just make that to them easy, his choice.

RKV Roger. 9 RKV.

S/C Go ahead.

RKV Okay, we noticed your A pump and primary loop control valves/^{temps}are coming on down and ... thought you might be a little cool in there in a bit.

S/C Roger, we got you.
(Garbled)

RKV Okay if you will switch the fuel cell O2.

S/C Now we have got the ECSO2 heater off fuel cell H2 (garbled)
Roger.

RKV Okay 9, you can move your switch back to the off position.

S/C Roger, it is off.

RKV Roger. We are all finished with that and have a good night's sleep. We will be watching you here on the ground.

S/C Roger.

HOU RKV, Flight.

RKV Go, Flight.

HOU Tell them the Black Team will see them when they

HOU get back.

RKV Again.

HOU Tell them the Black Team will see them when they
get back.

RKV Roger. We will see you next rev 9, and we
won't see you again tomorrow.

S/C Thanks for all the help.

RKV Roger, it has been a pleasure.

S/C How is the season down there these days.

RKV Well, its nights are calm and nice sunny
days.

9 Houston Black Flag says that they will see
you back in Houston.

S/C Okay.

RKV We have had LOS with Gemini

HOU Roger, RKV.

END OF TAPE

This is Gemini Control at 59 hours, 10 minutes into the flight and Gemini 9 is over the South Pacific Ocean. Tom Stafford and Gene Cernan are in the first hour in their sleep period and none of the tracking stations are attempting to communicate with them. About 20 minutes ago, the pass over the Coastal Sentry tracking ship in the Western Pacific, the CSQ Cap Com reported that his Flight Surgeon noted that neither of the pilots was moving around, but that their heart rates had not dropped into the sleep range yet and that they presumed to be still awake at that time.

Gemini 9 is 12 hours, 35 minutes away from retrofire. This is Gemini Control.

END OF TAPE

This is Gemini Control at 60 hours 10 minutes into the flight, Gemini 9 is over China, not quite within the range of the Coastal Sentry tracking ship. All the ground tracking stations continue to give Gemini 9 a go, the last station that took a look at the pilots, the Flight Surgeon took a look at the pilots, the RKV, about 35 minutes ago, reported that the pilots did not appear to be asleep or if they were sleeping it was not a deep sleep. They've been into this period that has been set aside for sleep about an hour and a half now. It's due to end at 66 hours and 30 minutes elapsed time, or about 2:15 a.m. Central Standard Time. We show the orbit now for Gemini 9 to be 157.3 by 145.7 nautical miles. Our clock show we are 11 hours 35 minutes away from retro-fire, which is set for 71 hours 46 minutes, 47 seconds of elapsed time. That's 726 20 Central Standard Time, this is Gemini Control.

END OF TAPE

This is Gemini Control at 61 hours, 12 minutes and 20 seconds after lift-off. Gemini 9 at the present time is over the tracking ship Rose Knot at the beginning of the 39th revolution. The Spacecraft Communicator aboard the Rose Knot reported to the Flight Director, here in Mission Control, that both pilots appeared to be sleeping fairly soundly.

Toward the mid-point of the 38th revolution, over the tracking ship Coastal Sentry, the Spacecraft Communicator reported that it looked like the Command Pilot was asleep and that the Pilot was resting well, with a heart rate of a little over 80 and it was an even ^{respiration} ~~respiration~~, but he couldn't say definitely whether he was asleep or not.

At 61 hours, 13 minutes and five seconds after lift-off and 10 hours, 33 minutes and 39 seconds before retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control at 62 hours, 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is over the Southwest Pacific, approximately over the area of Tahiti. During the pass over the Coastal Sentry Quebec, mid-way through this 39th revolution. The systems were "GO" on the ground. The crew apparently are still asleep. The next station which will acquire the spacecraft will be the tracking ship Rose Knot. Approximately 32 minutes from now, this will be a very low..elevation angle pass, in other words it will be almost over the horizon from the ship. The pass only lasts something like three minutes and 14 seconds. This will be the last pass of the evening over the Rose Knot, at which time the Flight Director, Cliff Charlesworth, likely will release the ship for the night. At 62 hours, 11 minutes and 30 seconds after lift-off and nine hours, 35 minutes and 14 seconds until retrofire, this is Gemini Control.

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/5/66, 10:50 P.M. TAPE 185, PAGE 1

This is Gemini Control, 63 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 at the present time is over the Persian Gulf and just a few minutes ago passed over the Canary Island tracking station at which time the Canary Island spacecraft communicator reported that the spacecraft was go on the ground from the telemetry readouts. The next station to acquire will be the Carnarvon station. It'll be a very brief pass because there's such a low elevation angle. In fact, they may not even be able to get too much in the way of telemetry data during this pass. At 63 hours, 11 minutes and 12 seconds after liftoff, and 8 hours, 35 minutes and 31 seconds before retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control 64 hours 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is nearing the end of revolution number 40, off the west coast of South America. Early in this revolution during the pass over the Coastal Sentry, the Spacecraft Communicator reported to Flight Director here that the suit inlet temperature was standing at 64 degrees, which is slightly higher than normal, but of no concern. The Flight Director then released the Coastal Sentry, since that was the last pass of this mission for that ship. At 64 hours 11 minutes and 14 seconds after lift-off, and 7 hours and 35 minutes and 30 seconds before retro-fire, this is Gemini Control.

END OF TAPE

This is Gemini Control at 65 hours, 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is crossing the north coast of Australia, toward the end or mid-point, I should say, of the 40th revolution. The orbit measurements at the present time stand at 157.2 nautical miles perigee, as you were, apogee by 145.6 nautical mile perigee.

We've had a little culture injected into the quiet hours of Mission Control, here with classical music being patched into an inactive communications loop. At the present time a composition by Johann Sebastian Bach is on the air and just prior to that, we had the Russlan and Ludmilla Overture by Mikhail Glinka.

At 65 hours, 11 minutes and 23 seconds after lift-off, and six hours, 35 minutes and 21.....20 seconds before retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control at 66 hours 10 minutes and 30 seconds after lift-off. Gemini 9 is just approaching loss of signal over the Canary Island tracking station and is presently over the north central portion of Africa. The Spacecraft Communicator at Canary said the spacecraft still looked good on the ground. The crew is due to awaken at some 20 minutes, at which time they will begin powering up the spacecraft systems and conduct a purge of the fuel cells. The forecast for the prime recovery are weather stands at scattered clouds at 15 to 20 thousand feet, visibility at 10 miles, the wind is out of the southeast at 15 knots, and wave height of 5 feet. At 66 hours 11 minutes and 25 seconds after lift-off, at 5 hours 35 minutes and 18 seconds before retro-fire this is Gemini Control.

END OF TAPE

This is Gemini Control at 67 hours, 30 seconds after lift-off. The Gemini 9 crew was awake when they came over the hill at Carnarvon station. A sleepy sounding Tom Stafford report...responded to the spacecraft communicator's call and the spacecraft communicator reported that the spacecraft was "GO" on the ground. The crew of Gemini 9 conducted a scheduled fuel cell purge during the Carnarvon pass and began their power up check list. They also got a flight plan update of items to be conducted, such as the crew status report at Canary Islands and began stowing equipment, prior to retrofire. They also have an eat period scheduled during this time. We have had a change of pace in the music being piped in on one of the inactive loops here in Mission Control. Run the gamut of the four B's of music, Bach, Beethoven, Brahms and Brass, Tijuana Brass that is. We have a tape now of the Carnarvon tracking station pass, which we will roll for you now.

CRO Carnarvon has M solid.

HOU FLIGHT Roger.

CRO Gemini 9, Carnarvon Cap Com. Gemini 9, Carnarvon Cap Com.

SPACECRAFT Gemini 9, ready to read.

CRO Gemini 9, Carnarvon Cap Com, we're standing by for your fuel cell purge. Gemini is "GO" on the ground Flight.

HOU FLIGHT Roger.

SPACECRAFT Hello Carnarvon, Gemini 9.

CRO Gemini 9, Carnarvon, we're standing by for your fuel cell purge.

HOU FLIGHT You might let them wake up Carnarvon.

CRO Yeah, Roger.

SPACECRAFT Hello, Carnarvon, Gemini 9.

CRO Gemini 9, Carnarvon Cap Com.

SPACECRAFT Roger, Carnarvon. Gemini 9, how do you read ?

CRO Loud and clear, how me?

SPACECRAFT Roger, we'll give you purge just a minute.

CRO Roger.

CRO He's purging/^{section}one H2 now.

FLIGHT O.K.

CRO Carnarvon has C-band track.

HOU FLIGHT Roger.

CRO Section two, H2. Section one, O2.

CRO Gemini 9, Carnarvon.

SPACECRAFT Go ahead, Carnarvon.

CRO Could you give me an onboard readout of your H2O2 pressure?

SPACECRAFT Roger. It's about full scale here at 500.

CRO Roger, copy.

SPACECRAFT It's 60 degrees.

CRO O.K., section two purge. Gemini 9, Carnarvon Cap Com.

SPACECRAFT Go ahead, Carnarvon.

CRO O.K., when you complete your fuel cell purge, will you begin the power up alignment check list.

SPACECRAFT Roger.

CRO O.K., Gemini 9, Carnarvon here. Will you standby to copy a flight plan update.

SPACECRAFT Roger. For the update Carnarvon.

CRO Roger, item one is a node, time 68 47 45, remarks rev 43 130 degrees west, right ascension 18 hours, 44 minutes. A second item, title Canary Island, time 67 37 40, remarks crew status report, then begin stowing equipment.

CRO Gemini 9, Carnarvon Cap Com

SPACECRAFT Go ahead Carnarvon, fuel cell purge is complete..are those the only two items?

CRO Roger, will you put your gyro quantity read switch to ECS 02?

SPACECRAFT Roger, ECS 02.

HOU FLIGHT You've got about 30 seconds, Carnarvon.

CRO O.K., fuel cell 02. Gemini 9, Carnarvon, will you switch to fuel cell H2.

SPACECRAFT Fuel cell H2.

HOU FLIGHT Send us an LOS main...

CRO H2

SPACECRAFT Roger.

HOU FLIGHT I thought H2 was busted, Carnarvon.

CRO Say that again, Flight.

HOU FLIGHT I thought that H2 was busted.

CRO We're still looking at it.

HOU FLIGHT What does it say?

CRO 006 PCMcount.

HOU FLIGHT That's about...

CRO We've had LOS here.

END OF TAPE

This is Gemini Control 67 hours 10 minutes and 30 seconds after lift-off. Gemini 9 at the present time is over the south central Pacific and within about 15 minutes are so should be entering the contact area of the Eastern Test Range stations. The crew has been awake about 40 minutes now, in that they were scheduled to wake up about 8 minutes before the recent pass over the Carnarvon station. At 67 hours 11 minutes and 4 seconds after lift-off, and 4 hours 35 minutes and 40 seconds before retro-fire this is Gemini Control.

END OF TAPE

Gemini Control here 67 hours 40 minutes and 30 seconds after lift-off.

The Gemini 9 spacecraft is presently in contact with Canary Island tracking station, they're getting ready to take some pictures in fact, they'er discussing with the Cap Com at Canary, which island is **the tracking station** actually on. During the Canary pass they put the temperature probe in their mouth to get oral temperature measurements of both command pilot and the pilot, and they reported also the water usage. Both crew men have had two meals since yesterday, the pilot had 5 hours of sleep and the command pilot had 6 hours of sleep. After taking these photographs they plan to complete the stowage procedure, prior to retro-fire. Just before entering the Canary Island pass, they passed over the Eastern Test Range station and reported there that the platform was aligned and they had the stowage pretty well under way. Spacecraft Communicator Buzz Aldrin, here in Mission Control passed up ball scores to the crew, and other less significant type news. Aldrin jokingly asked them if they wanted a vector so they could go after the ATDA again...cabin pressure aboard the spacecraft is holding at 4.8 pounds per square inch, and in another exchange between Aldrin and Stafford, Stafford said that he might break training and smoke a cigar after recovery. We have a tape recording of the Eastern Test Range pass, let's roll that tape now.....

HOU Gemini 9 this is Houston.

S/C Good morning Houston, Gemini 9.

HOU Roger, how's everything going up there?

S/C Roger pretty good, we've got the platform align 0 0 0.
Computera different up-date mode. The
stowage is pretty well squared away.

HOU Okay, we have a message for you on the computör
problem that we had the other day of that start com.

HOU When you get to...switching into the reentry mode, if the computer running light comes on, an alternate procedure is to switch out of reentry, to a spare position which is one detent, clockwise of reentry, and then switch back to reentry mode, 1 second prior to retro-fire.

S/C Okay we've just gone to the reentry mode computer and the light does not come on.

HOU Okay, good.
Gemini 9, Houston.

S/C Go Houston.

HOU Roger, got some ball scores if you're interested.

S/C Go ahead Buzz.

HOU Which ones are you interested in, I've got the whole smear here.

S/C Try the Astros' and the Cubs.

HOU Okay, Pittsburgh 10, the Astros' 5.

S/C You struck out, try again.

HOU Well if I can read this message, it looks like the Reds 5, the Reds 8 and the Cubs 3.

S/C You better go back to sweeping the streets, you struck out again.

HOU That's not very good? Okay had a tornado in Enid, Oklahoma has that one?

S/C We did?

HOU Yes.

S/C How's the weather in Houston?

HOU Looked pretty good when I came in.

S/C Pretty dark out, huh?

HOU Can you see anything of a tropical storm, about, oh a little bit behind you right now. There's supposed to be a storm building south of Cuba called,...it will be called Alma if it reaches that strength.

S/C We're in darkness right now, Buzz, can you give us a latitude and longitude on it.

HOU Oh how about 85 degrees west and 18 degrees north.

S/C85 and 18, Okay.

It looks like we pass just about over it next time around.

HOU On the Cubs Gene, they had a double hitter. The first was the Reds 8, and the Cubs 3. The second on Cubs won 9 to 5.

S/C Yipée! On two teams I haven't got many wins this week.

HOU Say again.

S/C I said out of two teams I don't have many wins this week.....Is poor Ed pulling his hair out after yesterday?

HOU Gemini 9, Houston. I didn't read your last transmission,could you give us a propellent quantity please?

S/C Roger. We're reading 0 on the gauge, Buzz,
but we still haven't had a drop on fuel regulated
pressure so we're not on the volkswagon tank yet.

HOU Okay understand. What's that pressure showing now?

S/C Say again.

HOU What is the pressure showing now?

S/C Roger, 305.

HOU Good enough. Ready to get a vector to go get
the ATDA?

S/C Say again. Well we've got a little bit of fuel
left, we might go to work on a fourth one.

HOU Might as well.

S/C We had good solid lock on the radar yesterday, of a
170 miles on it.

HOU Yes, that was real good.

HOU Gemini 9, Houston.

S/C Go ahead.

HOU What sort of reading now are you getting on your
cabin pressure?

S/C Roger. We're about 4.8.

HOU Roger, that's quite close to what we've got here.

S/C Just below you about 4.9 or 4.8 all night long.

HOU Okay, very good.

HOU Gemini 9, Houston.

S/C Go ahead Houston.

HOU Roger, Gene. Cliff is wondering when he should get
the cigars out?

HOU To light up, once you hit the water.

S/C When he sees our smiling faces on the carrier,
and I'll buy.

HOU You'll buy is that right?

S/C Right. Tell Chris I might even break down and
smoke one too.

HOU I'm not sure I heard that right.

S/C You did.

HOU Okay. We'll be seeing you, perhaps later on this
afternoon.

S/C Roger.

HOU Gemini 9, Houston.

S/C Go ahead Houston.

HOU Roger. Like to remind you the crew status report,
over Canary, and put the temperature probes in
at, oh about 1 minute. We've got 1 minute
to LOS.

S/C Roger.

ANTIGUA LOS Antigua.

END OF TAPE

This is Gemini Control at 68 hours and 30 seconds after lift-off. Gemini 9 at the present time is over the Indian Ocean and within about 13 minutes should be acquired again by the Carnarvon, Australia tracking station. Gemini 9's orbit at the present time measures with an apogee of 157.1 nautical miles and a perigee of 145.9 nautical miles, we have now a tape of the recent pass over the Canary Islands tracking station. Let's roll that tape now.

CYI Carnary has ac aid contact.

HOU FLIGHT Roger.

CYI TM is solid and both systems look good, Flight.

HOU FLIGHT Roger.

SPACECRAFT Roger, water gun now reads 2925 and the ...both crew members has had two meals since yesterday evening. Looks like it is nice and sunny up in the Canary's today.

CYI Yeah, it's a lovely day outside here.

SPACECRAFT We'll snap a couple of pictures.

HOU FLIGHT Canary, Houston Flight.

CYI Go ahead, Flight.

HOU FLIGHT You might ask them for a sleep report, please.

CYI Rog. We'll do.

SPACECRAFT Roger, the pilot has had five hours of sleep, the command pilot has had six hours.

HOU FLIGHT Roger, copy.

CYI Real good on the ground here, Gemini 9. We'll be standing by.

SPACECRAFT Roger, we've powered up the platforms, now we're going to take some pictures on this pass and then finish the stowing

CYI O.K., very good.

SPACECRAFT Canary's, 9, which Island is the tracking site on?

CYI That's on the Grand Canary.

SPACECRAFT Is that the big one in the middle?

CYI Right, that is the big one.

CYI We're down at the south end.

SPACECRAFT Have you got any trees down there?

HOU FLIGHT O.K., go ahead.

CYI O.K., he's still looking/^{real}good here, has this water got count position or do you want this thing broken down on a crewman basis?

HOU FLIGHT It's o.k.

CYI Roger.

HOU FLIGHT Kano go remote.

KANO Kano is remote.

HOU FLIGHT Roger KEM. TCA , Roger ARK A..... Rog..Roger TM...

CYI Canary, Cap Com, AFD.

HOU FLIGHT Go ahead, AFD.

CYI Could you give us some LOS OVC some?

HOU FLIGHT LOS OVC, roger.

END OF TAPE

MISSION COMMENTARY, GEMINI 9A (2), 6/6/66, 3:50 A.M. TAPE 193, PAGE 1

This is Gemini Control, 68 hours, 10 minutes and 30 seconds after liftoff. Gemini 9 is just approaching the Carnarvon, Australia, tracking station; and hopefully, we'll be able to cut in on the conversation between the spacecraft and the station. Meanwhile, here in Mission Control, the countdown clock numbers are getting smaller and smaller. It stands now at 3 hours, 35 minutes and 51 seconds before retrofire. Early risers in the Houston area may get a chance to see Gemini 9 due south about 40 degrees above the horizon toward the end of the forty-fourth revolution at 6:13 CST. The slant range will be about 210 miles. During the final revolution, it'll be much nearer Houston, but there will be too much sunlight at that time to see the spacecraft. We're still standing by here for Carnarvon acquisition. We're still about two minutes away. Still no word out at Carnarvon. We should be hearing confirmation of telemetry acquisition momentarily. Shortly thereafter, the spacecraft communicator will attempt to raise the spacecraft. Carnarvon just reported that the acquisition aid equipment at that station had acquired the spacecraft. As yet, the spacecraft communicator has not called the spacecraft.

CRO Gemini 9, Carnarvon.

S/C 9, Carnarvon.

CRO Rog. We don't have anything for you. If you need anything, give us a call.

S/C Will do. Thank you, Bill.

CRO Flight, Carnarvon.

HOU FLT Go ahead.

CRO You're going to have to bear with us on these

Well, apparently, Carnarvon station didn't have much traffic to pass up to the spacecraft. We'll listen for a while longer. This pass over Carnarvon lasts six minutes and 46 seconds.

CRO Flight, Carnarvon.

HOU FLT Go ahead.

CRO OK. Should be getting our summaries now.

HOU FLT Roger. How does TR look to you, Bill?

CRO Just getting a back room check. Stand by. OK. We're right with Canary. It's like about 125 of a second

HOU FLT OK.

CRO The VW tank is still fitting a 300.

HOU FLT Rog.

CRO We have pressure 48.

END OF TAPE

This is Gemini Control. Apparently this will be a very quiet pass over the Carnarvon station. So at 68 hours, 16 minutes and zero seconds after lift-off and three hours, 29 minutes and 41 seconds until retrofire, this is Gemini Control.

END OF TAPE

This is Gemini Control Houston at 69 hours 10 minutes into the flight. Last night the pilot Gene Cernan logged about 5 hours of sleep, described as fairly sound, the command pilot 6 hours of sound sleep. Both crew members have had breakfast, they were having breakfast when they came over Carnarvon on this last pass. Meanwhile the recovery people are stirring busily this morning in their room off the main floor of the Mission Operations Control room. They've been checking in with some helicopters down in the 46-1 landing area, and have pronounced it, pronounced the weather adequate for a recovery operation this morning. We have some conversation between the ground and crew, fairly minimal conversational pass, but we do have some conversation as they came across the states, they're now over mid-Atlantic. We'll play this for you now.

HOU Guaymas go remote.

GYM Guaymas is remote.

HOU Gemini 9, Houston.

S/C Houston, Gemini 9.

HOU Good morning Tom, we're standing by.

S/C Roger.....garbled....check on stowage,^{we knocked off}the electric time circuit breaker for about 1 second, check (garbled)

HOU We're not reading you to well, wait till we get a little more elevation here.

S/C Okay.

HOU Texas go remote, Guaymas local.

TEX Texas remote.

HOU Gemini 9, Houston. You say you found your electronic timer circuit breaker knocked off for a little bit, and it's reset?

S/C Roger. I thought I better knock it off, but got it right back on, probably just a second or so off. We haven't reached thatclock.

HOU We'll have to up-date that anyway.

S/C Okay.

S/C Houston, Gemini 9.

HOU Go ahead 9er.

S/C Roger, we should be approaching that tropical storm about now, we'll pitch down and see if we can take a look at it.

HOU Okay, that's the zone in your landing area.

S/C It's just a mile in the landing area though.

HOU Roger, we interview approaching 250 on your VW tank, when you get to that value, you might arm it.

S/C Roger.

S/C Houston, Gemini 9 we're arming the volkswagon tank at this time.

HOU Okay Tom.

S/C Really works good.

HOU Yes, we have it pressure coming up.

HOU Houston is about a minute from LOS at Bermuda.

ANTIGUA

LOS, Antigua.

This is Gemini Control Houston now for a close look at our weather situation this morning, we'll get a direct report from our meteorology section here in the Control Center.

The Gemini 9 crew will over-fly a tropical disturbance in the Gulf of Mexico, located near latitude 18 degrees north, longitude 85 degrees west, this morning., which they will be over-flying at approximately day-break and they will be able to sight some of the clouds in the vicinity of the disturbance. The out-look for the, in the mission area, in the western Atlantic, is the last reports we had from the carrier Wasp, indicate southeast winds, approximately 7, correction approximately 7 knots, with 1 foot waves, some swell in the area;..scattered clouds at 2,000 feet, with a higher over-cast.

END OF TAPE

This is Gemini Control Houston, 69 hours, 40 minutes into the flight. The major preretro update is expected to come in the next pass across the states. The spacecraft, presently, passing slightly east of Tananarive, moving across the Indian Ocean, right now. Our fuel history shows that approximately 12 pounds of useable propellant remains onboard. This is about twice the amount needed for the final attitude adjustment setting up the retro maneuver.

We have some tape conversation back from the Canary pass, wherein Tom Stafford, himself a former...a graduate of the Naval Academy, suggests that the Captain of the Wasp, put the big ship, as he put it, right on the landing point and Tom would come....right in the area. Here is that conversation.

CYI Canary's has ac aid contact.

HOU FLIGHT Roger Canary, how's it look?

CYI No TM yet in it. We have TM solid, Canary

HOU FLIGHT Roger.

CYI C-band track. Houston Flight, Canary.

HOU FLIGHT Go ahead, Canary

CYI O.K., we are showing him go except for Charlie,...

 Charlie's zero three left suit inlets air temp. at full

 scale high. We're checking at the groundspace.

HOU FLIGHT Roger.

AFD Canary's, AFD.

CYI Go ahead, AFD.

AFD That was Charlie able zero three left suit pressure.

CYI Negative, it's Charlie Charlie's zero three.

HOU FLIGHT O.K., fine.

CYI It is confirmed on the groundspace at all scale high..

HOU FLIGHT Roger.

CYI Gemini 9, Canary Cap Com. You are looking good on the

CYI ground. We're standing by.

SPACECRAFT Roger, Canary, we're just taking a few pictures here.

CYI Roger. Canary's has LOS. All systems are go.

HOU FLIGHT Roger, Canary.

TEX Kano go remote.

KANO Kano is remote.

HOU FLIGHT Gemini 9 Houston standing by.

SPACECRAFT Roger, Houston, loud and clear.

HOU FLIGHT You're the same.

SPACECRAFT Houston, Gemini 9. Would you relay the word to Captain Hartley to have the Big Ship right on the landing point?

HOU FLIGHT You bet we will.

SPACECRAFT O.K.

HOU FLIGHT Tom, your IVI versus Bank angle chart is...is satisfactory for this orbit.

SPACECRAFT Roger.

HOU FLIGHT Gemini 9, Houston approaching LOS.

TEX Tananarive go remote.

TAN Tananarive remote.

HOU FLIGHT Houston is one minute from LOS at Tananarive.

This is Gemini Control. Where our orbit this morning is showing 157 nautical miles by 145.9...157 by 145.9, we are on the 44th revolution around the earth. The 46th orbit, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 70 hours into the flight, right on the button. Over Carnarvon a few minutes ago, the Gemini 9 crew got a reentry up-date, they were also advised of the weather in the landing recovery area, here is that conversation....

CAR Carnarvon has act-aid contact.

HOU Roger, Carnarvon.

CAR Carnarvon has telemetry solid.

HOU Roger.

CAR All systems looking good.

HOU Roger.

CAR Gemini 9, Carnarvon.

S/C Go ahead Carnarvon.

CAR I've got your reentry information for you when
you're ready to copy.

S/C Roger, coming in very weak here.

CAR I said we have your reentry information for
you when you're ready to copy.

S/C Ready to copy.

CAR Okay this is for 46-1, your now in nominal RWI's are'
aft, 298, at down 112. Tank angle initial reflection
at 0 is plus 189, 5 5 is plus 45, and 9 0 is
set at 5. Pitch gimbal at 400K at 9 0. You
want have a lighter rise in that retro but you
will have 400 KC. Begin black-out at 22 plus 08.
Again black-out 27 plus 05. RAT of drogue, 28 plus
47. RAT main, 30 plus 21. Use your back-up

CAR curves for bank angles based on 146 circular.

HOU Carnarvon Cap Com Houston Flight.

CAR Go ahead Flight.

HOU Roger, in your read-up that's a minus 75, minus 75.

CAR Roger.

S/C Carnarvon this 46-1, understand the RVI are 298, and 112, down range ...depression 0 degrees plus 18 9er, at 55 degrees at 45, ...9er degrees at 75.

CAR That's minus 75.

S/C Minus 75, Roger. and pitch gimbal is 90 degrees.

CAR Roger.

S/C Entering TRV ofcorrection there 22 plus 08, S-bank out at 27 plus 05, and drogue at 28 47, and main at 30 plus 21.

CAR That's the sum.

CAR We've got one other thing here too.

S/C Go ahead.

CAR Okay the clouds are 2,000 scattered, visibility 8 miles, your winds are 120 at 12, the waves are 2 to 3 feet, your altimeter is 30.12, and the aircrafts in the area are air-gloss one and air-gloss two.

S/C Roger, altimeter is 30.12, and gloss 1 and gloss 2.

CAR And the Wasp is in there.

S/C I hope he's in there.

CAR Have you checked your main batteries yet?

S/C About an hour ago, I'll give them another check.

CAR Okay. I'd like to get the voltages off you.

S/C Okay, you want the reading?

Okay number one is 22.2,

CAR Rog.

S/C Number three is 218.

CAR Roger.

S/C Four is 23.

CAR Roger, got them all.

HOU What did you get in number 2, Bill.

CAR ...24.2

HOU Bill did you give them that weather data?

CAR That's affirm.

CAR Looks real good.

S/C Carnarvon, Gemini 9.

CAR Go ahead 9.

S/C What is theon time hack,.....

CAR Roger, I'll give you a mark at 69.56.00 in about
30 seconds. Standby 3, 2, 1, Mark. 56 minutes.

S/C Roger, roll.

CAR Flight, Carnarvon

HOU Go, Bill.

CAR I've got TR lagging by two and a quarter seconds
now.

HOU We're going to up-date that over the spacecraft.

CAR Okay.

HOU Keep watching it for us.

S/C Give me a mark in 5 seconds.

CAR ...3, 2, 1, mark.

CAR We're 40 seconds LOS Gemini 9.

S/C Roger.

CAR C-Band LOS.

END OF TAPE

This is Gemini Control Houston at 70 hours, 15 minutes into the flight. The Canton Islands station acquired the spacecraft at 70 hours and eight minutes. There was no voice communications, simply a tagging up. ~~Cassini~~ will acquire Gemini 9 at 20....70 hours and 24 minutes into the flight about nine minutes from now. The next pass around, Canton Island will be the prime station/for retrofire occurring within the Canton Circle. The precise coordinates on the retrofire maneuver.....standby one moment.....one degree 21 minutes south latitude, 179 degrees and 19 minutes west longitude. In other words, virtually on the equator and just a few minutes west of the International Dateline.

At 70 hours and 16 minutes into the mission, this is Gemini Control Houston.

END OF TAPE

This is Gemini Control at 70 hours and 36 minutes into the flight. Gemini 9 is moving across the Texas area. Tom Stafford has just armed the reentry control system thruster rings. They check out very well. He advises in all modes he is maneuvering the spacecraft with these RCS rings, ring A and ring B. They do work well. They contain 34 pounds of useable propellant in each ring. The pressures are both on each ring are up around 2500, which is exactly what they should be. Here is the conversation as the spacecraft moves across the states.

HOU Guaymas go remote

GYM Guaymas remote

HOU Gemini 9, Houston

S/C Go Houston, Gemini 9

HOU OK we got your retro pad when your ready to copy

S/C Standby one

S/C This is Gemini 9, I'll go ahead and arm the RCS rings at this time. Go ahead(garble)....

HOU Have you armed it yet Tom?

S/C Not yet Neil.

HOU OK hold off until we get over - a couple of minutes here and we'll get to Texas and we'll have TM

S/C Give me a buzz when you want me to arm it

HOU OK

S/C Go ahead with the pad Neil

HOU Ok this is 46-1. GETRC 71:46:44, 400K, 19 + 52, RETRB 25 + 42, bank left 50, bank right 50. I

HOU think you've got the rest of the stuff on that page.

S/C Yes I've got it
OK, 46-1, GETRC of 71:46:44, 400K at 19 + 52,
first bank at 25 + 42, bank left 50, bank right 50.

HOU That's right. I got your MDIU stuff when you are ready to copy

S/C Go ahead

HOU OK. Address 03 - 64 00 6, address 04 - 34 77 5,
address 65 - 01 88 1, address 66 - 34 48 7,
address 07 - 65 55 6, address 08 - 40 83 2,
address 09 - 15 29 5, address 10 - 02 77 1,
address 11 - 28 50 0. Go ahead

S/C Roger. 03 - 64 00 6, 04 - 34 77 5, 65 - 01 88 1,
66 - 34 48 7, 07 - 65 55 6, 08 - 40 83 2,
09 - 15 29 5, 10 - 02 77 1, 11 - 28 50 0.

HOU That is correct

S/C Do we have that load in the computer at this time?

HOU Negative , you do not. Your computer is not loaded yet.

S/C All right

HOU OK that bank right was 60 degrees. It was bank left 50, bank right 60.

S/C That's bank right 60

HOU OK, we're ready to transmit the load now.
Are you all set.

S/C We're all set.

HOU OK. Transmitting now.
Texas go remote

TEX Texas remote

HOU Guaymas local

HOU Did you get a light on that? Did you get a light
on that Gene?

S/C Affirmative.

HOU OK, we're ready for you to arm RCS, when your ready.

S/C Roger. Arming RCS now.

HOU And, we're ready for you to turn the batteries on.

S/C Coming on. For ring C I read 2500, ring A 2450.

HOU Roger we agree with that.

S/C C batteries on and we have a light.

HOU OK. We'd like to have you check your peroxide
temperature and pressure please.

S/C OK. Peroxide pressure seems to have dropped to
490 , it was at 500 and our temperature is about
65.

HOU Roger, we copy. Put your antenna select to reentry
please.

S/C Antenna is on reentry.

HOU OK. Your load looks good based on the computer
readout on the ground.

S/C Roger. I'm checking again
Is RCR sync Neil.

HOU Say again

HOU Ok niner we're ready to transmit TR.

S/C OK, we're ready for it soon as we get the light

HOU OK. Looks ok on the ground.

S/C OK and the load checks out good

HOU Good

S/C Houston, Gemini 9. Hope RCS meets A and B checkouts
in all control modes.

HOU Roger Tom.

S/C We have just completed(garbled)...at this time.

HOU Roger

S/C Neil old chap, is Captain Hartley guaranteeing us
the big boats on the spot?

HOU We couldn't copy that Tom.

S/C Roger. Is Captain Hartley guaranteeing us that
the big boat is going to be on the spot?

HOU I think that you'll know where you are landing
better than they know where they are.

S/C Roger
Houston, Gemini 9. Do you want me to leave the
reads on or turn them off at this time?

HOU Yes, let's leave them up for the rest of the time.

S/C OK.

ANT AOS Antigua

HOU Niner , Houston. Do you want to give us a status report on your reentry stowage and pre-retro checklist?

S/C Roger. We have completed all the reentry stowage and we have completed the - all the pre-retro checklist and standing by now for TR...(garble)..

HOU Roger.
Bermuda go remote

S/C Houston, niner

HOU Go ahead

S/C Pass GET time hack please Neil.

HOU OK. GET time hack is 70:42:10 on my MARK. MARK
70:42:10

S/C We're right on.

CYI Canary Cap Com AFD

HOU Houson, 'go ahead
Go ahead

S/C Roger. You might have CS check our water quantity pressure. We can't get a full charge in the gun anymore.

HOU Roger understand. You can't get a full charge to the gun. We're about to get to LOS. We'll probably talk to you at Canary.

S/C Roger.

HOU Canary Cap Com AFD

CYI AFD Canary go ahead

END OF TAPE

This is Gemini Control Houston. We're 70 hours, 54 minutes into the flight. We're 51 ^{minutes} / and 45 seconds away from retrofire. With the spacecraft over Canary the flight plan calls for the crew to begin their pre retro check list. We suspect that Tom Stafford and Gene Cernan have probably already completed ^{all} / the items onboard. They armed their RCS rings across the tates last time. They steadily kept ahead of the flight plan by some 10 to 15 minutes. We have tape conversation as the spacecraft moves through Canary area and here it is.

CYI Canary has ACQ aid contact. Canary has C-band track. TM solid. All systems are go flight.

HOU FLIGHT Roger, Canary.

CYI He still looks good flight.

HOU FLIGHT ROger.

CYI Gemini 9, Canary Cap Com.
We have you go on the ground and we're standing by.

S/C Roger Canary.(garbled).....Everything is go.

CYI Very good.

AFD Canary Cap Com, AFD.

CYI Go ahead, AFD.

AFD His TR should be reading 55 37 654.

CYI Roger, we understand.

AFD Okay, you can check it out on the spacecraft.
We just updated TR.

CYI Roger.

CYI AFD, Canary, the spacecraft is lagging by 1/8
of a second.

HOU AFD Roger.

CYI Flight, Canary

HOU FLIGHT Go ahead, Canary.

CYI Okay, our PCO2 is going up sort of rapidly.
We're up to 50. We're up to 2.16, it's gone
up from a 187 in about five or ten seconds
here. It's up to 2.13 now, flight.

HOU FLIGHT Okay, Surgeon says he's not concerned about
that at this time.

CYI Roger, understand.

HOUSTON FLIGHT Roger, keep reporting the values to us and
get it ⁱⁿ your post pass message.

CYI Roger, Flight, will do.
2.46 flight.

HOU FLIGHT Roger.

CYI 2.54 and he's still go.

HOU FLIGHT Canary Cap Com, Houston Flight.

CYI Go ahead, Flight.

HOU FLIGHT Stand by one.

CYI It seems to have stabilized now flight. The last
three readings were 254.

HOU FLIGHT Okay.

CYI And we have new increase in respiratory rates.

HOU FLIGHT Okay, lets not bother the crew with it then.

CYI Roger. We have one minute to LOS, flight.

CYI Canary has LOS, Flight.

HOU FLIGHT Roger, Canary.

CYI It is on 2.61 on PCO2 but we don't know if there is a drop out or not.

HOU FLIGHT We feel it may be associated with the crews closing of the tape recorder power circuit breaker in the pre retro check list there.

CYI Very good.

HOU FLIGHT Okay, Harold, see you back in Houston. We're all done over there.

CYI Okay, Flight, thank you.

KANO Kano's remote.

HOU Gemini 9, Houston, standing by.

S/C Roger, Houston.

HOU FLIGHT Carnarvon Cap Com, Houston Flight.

CRO Houston Flight, Carnarvon Cap Com.

HOU FLIGHT Roger, Bill, EECOM wants me to advise you the acq aid beacon is now on.

CRO Okay.

HOU FLIGHT I assume you monitored the discussion on the PCO2 sensor.

CRO Roger, they suspect the tape recorder power circuitry.

HOU FLIGHT That's affirmative.

GEMINI 9A (2) MISSION COMMENTARY, 6/6/66, 6:35 a.m. Tape 200, Page 4

CRO Okay.

AFD Carnarvon, AFD, all we have for you now Bill
is the timer hack in twenety minutes.

CRO Rog.
list
The check/is completed now, rog?

AFD Affirmative. And they're just coasting along
waiting. From when we copled he must be
down to TR minus five. Its as far down as
he can go.

CRO Rog.

HOU FLIGHT We'll get you an MR but I just thought I'd
brief you, since the flight plan is kind of
goofed up.

CRO Okay.

END OF TAPE

This is Gemini Control Houston at 71 hours, 14 minutes into the flight. We're 32 minutes and 38 seconds away from retrofire. Gemini 9 is over Tananarive and we have this conversation.

CRO AFD, Carnarvon.

AFD Go ahead, Carnarvon.

CRO I wonder if you could do me a favor? Would you repeat the translation message for the last valid mode that covered the spacecraft and put a header on it?

AFD Didn't get it?

CRO That's negative

AFD What do you want on that ET Bill?

CRO I'd just like to have it sitting here Flight.

HOU Roger the crew hasn't checked it out, we'll get you that copy out ASAP.

CRO Ok

HOU I was going to say if you needed anything fast I could give you the numbers by voice. Tananarive go remote.

TAN Tananarive remote.

HOU Gemini 9 Houston standing by

S/C Roger Houston. We're still aligning plot points and taking it easy.

HOU Roger. OK Bill, do you remember the MI on the OBC data that Grissom needs?

CRO Roger, one(garble)....

HOUthen timer hack. I guess 20 minutes is a convenient time but we'll leave that up to you.

CRO I figure he'll probably have.....

HOU OK fine. You might just query him and

CRO Rog.

HOU Carnarvon we're also ~~transmitting~~ you the translation method.

CRO Roger.

HOU Be there shortly, Bill. I'll standby for when you get it.

CRO Ok I want to question you about that?
I was wondering why I didn't get the load.

HOU I've been trying to figure that out also. But you'll have it shortly. I think we would have sent it to you. We had plenty of time, we'd have sent it to you if he did not get it in here. I think we should have sent you the translation. As a matter of fact,

CRO Roger

HOU Give you the translation at least.

AFD Carnarvon, AFD

CRO Carnarvon go ahead

HOU Roger Bill do you have that message yet?

CRO The summary is coming in for the - ET's coming in right now.

HOU OK fine.

HOU Gemini 9 Houston approaching LOS Tananarive.

S/C W...garbled....

TAN Tananarive has LOS

END OF TAPE

This is Gemini Control Houston. It is 71 hours 24 minutes into this flight. Twenty-two minutes and 30 seconds away from retro fire. As we started to talk the Carnarvon station raised the spacecraft and Bill Garvan the Capsule Communicator there is talking with Gene Cernan. Let's go now to the spacecraft and monitor this conversation.

CRO 3, 2, 1, mark.

S/C Roger, we are right on event timer and also on indicator. We are coming down real well.

CRO Okay.

S/C ...read it to you at this time.

CRO Roger.

We don't have anything else for you. We will be standing by. Have a good trip home.

S/C Okay, thanks for all the help, Bill.

CRO Roger.

HOU Why don't you tell them you are taking out citizenship papers over there.

CRO Roger, Flight Carnarvon.

HOU Go ahead, Bill

CRO Okay, my TR differential here is spacecraft is lagging by 125 with an occasional 250.

HOU Roger. 1/8th to a quarter.

CRO Rog.

HOU That is a lag, right?

CRO That is lagging.

HOU Sounds good enough for government work.

CRO Roger, we got the acq aid beacon too.

HOU Okay. Tracking C-Band?

CRO Not yet, takes a little while yet.

 Flight, Carnarvon.

HOU Go, Bill.

CRO We see the beacon that his the C-Band we
 don't have track yet. Okay, we have got
 C-Band track.

HOU Roger.

This is Gemini Control Houston. Apparently a rather quiet pass. Tom Stafford, we feel sure, is setting up his retro attitude. This is an attitude which means blunt end forward. He will be pitched down at 20 degrees at retro fire. Sixty seconds before retro fire he will check this attitude very carefully and hold it 20 degree pitch down, other rates yaw and roll at zero. Simultaneously Gene will press three switches on his side of the cockpit one to cut the fuel lines to the adapter, guillotine action severing the fuel lines. A second button separates the electrical connections, again guillotine that cuts through and pinches off the wires and a third button which will separate the equipment adapter, the after portion of the Gemini spacecraft leaving only the retro adapter attached. At 30 seconds before retro fire, Stafford will arm his retro squibs, energize

the circuits to fire his four retro rockets. At T-10 seconds before retro fire, Cernan will arm the automatic retro fire and will energize it by starting it. Precisely at retro fire Gene Cernan will start a stop watch and the command pilot will push the computer, in the start computer position. At retro fire plus one second Cernan should press a button which will manually fire the retros should any malfunction take place in the automatic sequence. He will take a quick check on the computer and he will observe the horizon very carefully during retro fire phase.

Shortly after retro fire, we should hear from the pilots on their IVI readout, their incremental velocity indicator, a digital clock or dial arrangement in the spacecraft and the values we are looking for should sound like this, aft 298, that is a Delta V, they are taking out the spacecraft 298 feet per second and the down vector should read 112, one one two. We will see how close we come to that, the retro fire maneuver itself is to take place at an altitude 153.7 nautical miles, one degree 21 seconds south of the equator at 1.79 degrees 19 minutes west longitude. Very close to the Canton Island site. Present retro fire time is scheduled for 71 hours 46 minutes and 44 seconds into the flight. We presently show 71 31 minutes and 32 seconds. This is Gemini Control standing by for any additional conversation from Carnarvon

CRO Carnarvon has one minute until LOS.

S/C Roger, Carnarvon.

CRO Carnarvon has LOS.

HOU Roger, Carnarvon, we will keep you briefed by twix.

END OF TAPE

This is Gemini Control Houston. We're 11 minutes and 14 seconds away from retrofire. That event programmed for 71 hours, 46 minutes and 44 seconds into the flight. 19 minutes and 52 seconds after retrofire, we should have reached the 400,000 foot mark over the western United States. The blackout period is predicted for 22 minutes and 8 seconds after retrofire, or at an elapsed time of 72 hours and 8 minutes, 51 seconds. The blackout period will end at 27 minutes and 5 seconds after retrofire. Our drogue chute should come out at 28 minutes, 47 seconds following the retrofire maneuver. The main chute at 30 minutes, 21 seconds. The landing itself at 34 minutes and 21 seconds after retrofire. We expect fairly good communication today particularly in the landing area because we are landing relatively close to Grand Turk Island. The landing point is 330 nautical miles almost due East of the Cape. During the latter portion of the letdown, once the crew is approximately 300,000 feet above the surface of the Earth and coming over Texas, they will begin to feel some steering authority, in the Gemini spacecraft. The pilots look forward to this period of the flight not just because it means the end of a mission, but it does present one of the more difficult piloting tasks. We've controlled all the landing - Gemini landings - with the one exception of Gemini 4 which came in Mercury fashion or rolling reentry. This morning the computer works and the pilots are prepared to do a steerable landing. They will be blunt end forward

GEMINI 9A (2) MISSION COMMENTARY, 6/6/66, 7:15 A. M.

Tape 203, Page 2

and heads down as they come into the steering area which extends from roughly 300,000 feet down to about 180,000 - 175,000 feet. Their maneuvers will - are planned as a bank left maneuver, 50 degrees, followed by an immediate bank right, 60 degrees. And when they do these maneuvers they will feel some yaw authority in the spacecraft. We're now 8 minutes and 32 seconds away from retrofire. This is Gemini Control Houston.

END OF TAPE

This is Gemini Control Houston, 71 hours, 44 minutes into the flight. At about 30 seconds ago, the Canton station acquired the communication. It's a little gravelly, somewhat better though than the communications were yesterday. We're one minute and 52 seconds away from retrofire. One minute, 23 seconds away. At the one minute mark, Tom Stafford will hold the rates very steadily, 20 degrees pitch down attitude. Other rates will be zero. At the same time, Gene Cernan will cut the fuel lines, the electric lines, and finally separate the equipment adapter. Mark, 60 seconds to retrofire. Sep OAMS, sep elec and sep adap, Tom Stafford advises. Those items have separated from Gemini 9. Mark, 30 seconds from retrofire. Ten seconds away, 8, 7, 6, 5, 4, 3, 2, 1 - Retrofire! Counting up now at 14 seconds from retrofire, we had no report from Gemini 9. Four good retros. Gene Cernan sung it out. Four good retros. 32 - 33 seconds after retrofire. 296 - his incremental velocity indicator shows. The plan was for 298. He was within two feet from the planned aft reading. His down indicator showed 125. The plan was 112. He's in excellent position. We still have no confirmation on retro jettison, the retro adapter itself. Now Stafford does confirm that the retro adapter has separated. We're two minutes and 13 seconds after retrofire. We're 31 minutes and 42 seconds from splash. Over Hawaii Tom Stafford is to give the Hawaii station a detailed estimate on the retro maneuver. He will verify again his IVI readouts, and he

will estimate his attitudes during retrofire. He will also advise us whether there was an auto - automatic - or a manual retrofire. We suspect it was automatic. Three minutes, 26 seconds since retrofire and no additional conversation. Hawaii should acquire the spacecraft in approximately 20 seconds. Cernan advises that the post retro check list has been completed. The post retro check list is complete. We're not certain ~~whether~~ that communication came via Canton or Hawaii. He should be moving out of the Canton acquisition area, and we are likely communicating with the spacecraft, or will be, via Hawaii. Now the spacecraft is over Hawaii. Here's how the conversation is going.

S/C Roger, we're counting now on the event timer but go ahead and give us a hack at six minutes, Hawaii.

HAW Roger, will do. 3 2 1 - Mark. Gemini 9, Hawaii. Gemini 9, Hawaii.

S/C Roger, Hawaii. We are inverted and we have a moon light horizon.

HAW Roger, were you with me on the mark?

S/C We were right on.

HAW Roger. Did you have an auto retro?

S/C Sure did. And the IVI's I passed on to Houston are now 296 aft, 4 right, 125 down.

HAW Roger, is your attitude normal?

S/C Right on the button.

GEMINI 9A (2) MISSION COMMENTARY, 6/6/66, 7:24 A. M.

Tape 204, Page 3

Over the Hawaii station, Dr. Berry's heart scope here is showing Stafford with a heart rate of 80 beats per minute. Cernan's heart, 100 beats per minute. He had estimated that the rates might get up to 130 - 125 to 130 during retrofire. Of course, we have no valid - vital information such as heart information via the Canton station. That will have to come later from onboard tapes. We'll go back and monitor now for any additional conversation via Hawaii.

END OF TAPE

HAW Gemini 9 Hawaii. We have one minute to LOS.

Standing by.

S/C Roger Hawaii.

HAW Roger

This is Gemini Control. We are ten minutes away, ten minutes since the retrofire maneuver and Hawaii has Loss of Signal. The spacecraft has moved south and east of the Hawaii ring. California should acquire at 72 hours and one minute into the flight, about four minutes from now. We are at 23 minutes, 30 seconds away from splash. In the recovery area two weather reconnaissance aircraft have returned to the carrier Wasp; they report no significant weather disturbances in the immediate area; they report a thin overcast at about 2,000 feet and no indication of rain. This is Gemini Control Houston.

This is Gemini Control Houston. We are 15 minutes since retrofire, and Neil Armstrong has just put in a call to Gemini 9 via California. Elapsed time is 72 hours, two minutes. No additional communication from the spacecraft, we are presently showing an altitude of 80 nautical miles, 80 nautical miles as it starts its final sweep across the states. Seventeen minutes and 37 seconds to splash.

END OF TAPE

This is Gemini Control Houston. We have some minor revisions on some of our events to come here. The blackout period now is estimated to begin at 22 minutes and one second after retrofire. We presently show 18 minutes and 8 seconds. The next event is the end of blackout, 27 minutes and 7 seconds after retrofire. The drogue chute should deploy at 28 minutes, 43 seconds. The main chute at 30 minutes and 8 seconds. Splash still predicted for 34 minutes, 21 seconds.

Neil Armstrong our capsule communicator on this shift is advising Gene Cernan of the times that I just relayed to you. Present altitude 60 miles. Spacecraft coming across the White Sands area.

(PAUSE)

Spacecraft now is slightly below 400,000 feet. We're at 20 minutes and 15 seconds after retrofire. One and a half minutes from now we should begin the blackout period.

(PAUSE)

Stafford advises he is rolling left 50 degrees. This will be followed by a roll right maneuver to 38 degrees.

(PAUSE)

They are coming up on the begin blackout period at 22 minutes and one second. We presently show 21 minutes, 30 seconds since retrofire. Present altitude shows 40 miles. Now we are into the blackout period. Twenty two minutes (22). Spacecraft is almost directly over Houston.

(PAUSE)

The end of blackout period is predicted for 27 minutes and 7 seconds after retrofire. That would be about 4 minutes from now.

(PAUSE)

After a look at the data, Gene Kranz the Flight Director's assessment of the retrofire was "it looks like we had a pretty good one." He is

quite satisfied with all the data he's seen, reports from Hawaii, additional tracking from White Sands and we look like quite a nominal reentry at this point. We are about 10 minutes away from splash. Three minutes away from the end of blackout period.

(PAUSE)

We're at two minutes away from the end of blackout.

(PAUSE)

The present altitude is about 30 miles.

(PAUSE)

This is historically one of the quietest periods during any given mission. Today's flight is certainly no exception to that precedent. Flight Dynamics again assures us that all the reentry tracking data looks very close to the nominal.

(PAUSE)

We're advised that the Wasp has established radar contact with the spacecraft.

(PAUSE)

Twenty-seven minutes, 16 seconds into the flight. The Cape downrange stations have acquired signal from the spacecraft beacon, still no voice contact. Neil Armstrong has put in a call and Tom Stafford is advising that everything went well throughout the blackout.

END OF TAPE

S/C We are rolling to the left.

He advises that he is doing another left roll. He is pulling four g's. We don't notice any change in his voice level and even under that g load. Five minutes 35 seconds to predicted splash. Spacecraft is about at 50,000 feet at the point where the drouge should be out.

 We have you on radar and can see...

 Twenty-nine minutes since retro fire.

S/C The drouge is out.

The drouge is out. Stafford confirms that the drouge chute has deployed. And on one of the down range aircraft pilots in communication with Gemini 9, the prediction from the spacecraft is they will be two and a half miles long. Gene Cernan has just advised one of the down range aircraft, two and a half miles long. Four minutes and 15 seconds from splash. Thirty minutes since retro fire. We are coming up on main chute one. Gene Cernan now revises his estimate 3.3 miles long, he indicates. Meanwhile Gene Kranz suggests here as soon as the main chute drift takes effect, it will revise Gene's estimate. Thirty-one minutes since retro fire and since the wind is from the east the betting here is that the easterly wind will float the spacecraft right back to the aiming point. We will see how this comes out. We have had loss of signal from the Cape station since the spacecraft is now down very close to the water. We did not get a confirmation on main chute. We have a picture. This picture is being portrayed

GEMINI 9A(2) MISSION COMMENTARY, 6/6/66, 7:45 AM TAPE 207 PAGE 2

in one of our big front display screens here in the control center and everybody is up on his feet watching it. Tom Stafford says "Have you got us on sight" and one of the recovery troops advised they had them - they had the spacecraft in sight and suggested that the whole world had it in sight as well. (Pause) Stafford advises that he would like to remain in the spacecraft, they will be hoisted aboard while still in the spacecraft. Flight Director now joshing the retro officer and asking him if he took into account that easterly wind, which apparently is going to put the spacecraft down very, very close to the USS WASP. (Pause) The WASP advises that the R & R section, the forward portion of the spacecraft has hit the water. (Pause) The WASP advises they are standing by for splash. There is splash. Thirty four hour - 34 minutes and 14 seconds after retro fire. We would estimate that the splash occurred 72 hours and 14 seconds after launch. (Pause) The WASP is closing on the spacecraft at a speed of 14 knots. (Pause) From the deck of the WASP we get an estimate of four and a half miles, 4 1/2 miles from the spacecraft. (Pause) From the deck of the WASP we are advised that the - they estimate the recovery in approximately 45 minutes. They will not approach the spacecraft until the collar is attached. We have just gotten word that we have gotten a thumbs up to the helo in the area from the crew. The astros appear to be in good shape. The prime helicopter out there this morning is being piloted by Lt. Cmdr. J. M. Perrenon of North Kingston, Rhode Island. The swimmers

GEMINI 9A(2) MISSION COMMENTARY, 6/6/66, 7:45 AM TAPE 207 PAGE 3

are now deployed. They are in the water and will begin the process of attaching the flotation collar which frequently - which normally takes about 30 minutes.

END OF TAPE

The swimmers have been in phone communication, hard line communication, with the astronauts and they have gotten a thumbs up indication at the window. The second helicopter in the area is being piloted by Lt. Commander Gerald M. Webber, of Jamestown, North Dakota. The carrier advised that the collar is inflated and they estimate their present distance -- Wasp to spacecraft distance -- at about three miles.

The communication circuits are really humming from the recovery area.

Present estimate spacecraft to Wasp is 5700 yards. Swimmers busy out there with the collar. Their first assignment, however, is to get a visual indication of the conditions and they got that with two big thumbs raised in the air.

The Wasp is moving now at 18 knots toward the spacecraft. The Wasp now is presently estimating they will be along the spacecraft at 14 minutes after the hour, some six to eight minutes from now.

From the deck of the Wasp, we are told that the astronauts are opening the hatch at this time.

Tom Stafford is standing up in his seat waving to the swimmers.

This is Gemini Control Houston. Now Gene Cernan also is standing up in the spacecraft. The three swimmers working busily around it are Lt. JG Ben Bowman, Third Class Daniel Frazier, and Seaman Roger Bates. Tom Stafford is shaking hands with one of the swimmers now congratulating them on the ^{good} job they've done.

This is Gemini Control Houston, the consensus here this morning is, based on past missions, that these communications have been nothing short

of outstanding. We cannot recall a mission where we had more communications, it was of good quality all the way in. Tom Stafford was talking to the Recovery forces as he came over the east coast of the United States. He was in almost constant communication the last 300 miles to the splash point about 330 miles off the coast. And, the information flow has been excellent.

END OF TAPE

This is Gemini Control Houston. Without searching any records, we suspect that the spacecraft came down closer to the prime recovery ship than any previous flight - any of the previous 13 United States Manned space flights. This the 13th, of course. The landing point, somewhere between three and four miles. That will have to be refined. We recall that Gordon Cooper on his first Mercury flight landed within five miles, approximately four and a half miles, from the carrier out in the Pacific also, and he was observed on main chute as he descended to the water. Alan Shepherd in his first manned space flight was seen and watched as he landed, came down main chute. Several other flights have been observed by aircraft and, of course, all of them have been followed on radar as they came in, but this appears, immediately, to be the closest we've ever come to the prime recovery ship.

END OF TAPE

This is Gemini Control Houston, during this lull before the pickup. Everyone, all the Flight Controllers here in the Control Center are watching television like we suspect everyone else is. Someone just passed the word on the Flight Director's loop that the Gemini X simulations would begin at 3:00 this afternoon. The remark was in jest I'm sure but the activities for Gemini X will pickup immediately. Probably not before tomorrow morning though.

(PAUSE)

END OF TAPE

This is Gemini Control Houston. The spacecraft is presently three hundred (300) yards off the port bow of the Wasp. We still don't have an estimate as to when the two will be hoisted aboard.

(PAUSE)

This is Gemini Control Houston. Our Flight Dynamics bank is looking again at their reentry data. Their best estimate right now is the spacecraft missed the exact aiming point by some 3,000 yards. Three thousand (3,000) yards long, which they claim is pretty close for Government work.

(PAUSE)

This is Gemini Control Houston. We're estimating now that the spacecraft will be hoisted aboard in approximately 12 minutes. Twelve to thirteen minutes from now. This is Gemini Control Houston.

END OF TAPE

HOU Coming up on one minute to retrofire.

S/C Roger.

HOU Mark, one minute.

S/Csep elec and sep adap.

HOU 30 seconds. 10, 9 8 7 6 5 4 3 2 1 - Retrofire!

S/C garble

HOU Roger.

S/C The IVI's read 296 aft, 4 right, and 125
down.

HOU Roger, say again your four aft.

S/C Roger, 296.

HOU Roger, 296. Sounds like a good one.
Okay, confirm retro jet.

S/C Roger, retro jet on time.

HOU Thanks, Tom.

S/C IVI's still read 296 aft, 4 right and 125 down.

HOU Thanks, Tom.

S/C We're rolling ...at this time.

HOU Roger, copy.

AFD Hawaii Cap Com, AFD.

HAW AFD, Hawaii.

AFD Okay, let me give you a RET time hack. Okay,
four minutes, 20 seconds. Give it to you at
30.

HAW Okay.

S/C Houston, Gemini 9 Approach retro check list
is complete.

HOU Roger.

HAW Mark. Wait till I give you another one. I thought I was going to have to talk to him through here.

AFD Okay, 4:45.

HAW I was up 4:39 40..

AFD Go. You're on it.

HAW That's it?

AFD Right.

HAW Okay. We have a C-Band track and solid TM.

AFD Roger, Hawaii.

HAW Gemini 9, Hawaii.

S/C Hawaii, go ahead.

HAW Roger. If you'll set six minutes in your elapsed timer I'll give you a hack on time since retrofire. 30 seconds.

S/C Roger, We're counting now on the event timer but go ahead and give us a hack at six minutes.

HAW Roger, will do. 3, 2, 1 - Mark. Gemini 9, Hawaii. Gemini 9, Hawaii.

S/C Hawaii, Gemini 9. We are inverted and we have a moon light horizon.

HAW Roger, were you with me on the mark?

S/C We were right on.

HAW Roger. Did you have an auto retro?

S/C Sure did. And the IVI's I passed on to Houston are now at 296 aft, 4 right, 125 down.

HAW Roger, is your attitude normal?

S/C Right on the button.

HAW Gemini 9, Hawaii. We have one minute to LOS.
Standing by.

S/C Roger, Hawaii. See you back in Houston.

HAW Roger. Hawaii has LOS.

HOU Roger, Gary. See you at home.

HAW Roger.

CAL California has contact.

... California go remote.

CAL California remote.

HOU Hello, Gemini 9. This is your Houston prime
contactor standing by.

S/C garble

... Guaymas go remote, Texas go local. California
local.

GYM Guaymas remote.

CAL California local.

TEX Texas has Gemini acquisition.

HOU Okay, Gemini 9. We're ready with the retro
update when you're ready to copy.

S/C Go.

TEX 400 K is 19 + 37. Skip down to blackout.
That's 22 + 01 in blackout. 27 + 07. Drogue,
28 + 43. Main, 30 + 08. You're down range
needle deflection + 94.

... Texas go remote. Guaymas local.

TEX Texas remote.

S/C ...+ 07. Drogue is 28 + 43. Main is 30 + 08. Down range needle is + 94.

HOU That reflection is based on your IVI's. We'll be getting you any other data we can from radar.

S/C Roger. We have a reflection within one second at 400 K.

HOU Very good. Gemini 9, Houston. Got your bank angles?

S/C Got you a roll left 50 right now.

HOU Okay, you're back - bank angles are 28 degrees left and bank right 38. RETRB is 25 + 27.

S/C Roger, copy. Bank left 28, bank right 38 and RETRB 25 + 27.

HOU Roger. See you after blackout. Gemini 9, Houston. Your drogue and main times are good.

S/C How do you read me?

HOU Read you loud and clear.

S/C How easy....fuel cells are absolutely nulled.

HOU Very good.

S/C Gemini 9. We're now at the rate and rolling to the left.

HOU Roger, we're with you.

S/C Three g's, still rolling left, 2 and a half g's. garble....Roger, Westwind. We're taking.... and coming down. Roger, stand by.

WASP We're estimating about two miles off the target.

S/C Roger.

WASPestimating two and a half miles long,
two and a half miles from the Wasp.

S/C Roger. Two and a half miles from the Wasp.

S/Cat 20,000 feet.....

WASP Roger, Gemini 9.

WASP Estimating three and a half miles long, 3.3
miles long.

END OF TAPE

WASP Gemini 9 (Garbled)

S/C (Garbled)

WASP Gemini 9, this is...we have you directly ahead
of the WASP visually.

S/C Roger. Roger we got two points and we are coming
down. Give my congratulations to Captain Hartley
for being on the spot.

WASP Roger, ... welcome aboard....

S/C Have you got us in sight?

WASP Roger,...everybody on the flight deck has you..
about two miles ahead.

S/C Hope you got us on TV...

WASP Roger, you will be very shortly.

S/C ...passing through three thousand feet.

WASP ...have them in sight....got a chopper up here
some place.

Gemini 9, you are on TV.

S/C How about that.

Tell Captain Hartley we would like to come
aboard shortly in the spacecraft.

WASP Roger(Garbled)

S/C (Garbled)

WASP No. 207.....(Garbled) righto.

Gemini 9, what is your altitude, over.

S/C Roger, passing 900 feet.

WASP Roger, this is Swim One and still have them in sight. The R and R section just hit the water.
Roger, we get it.

...will pick up area upon landing, Swim Two is going in for R and R.

This is Swim One, splashdown, splashdown.

Roger, we have you (garbled)

It was a good one. (garbled)

S/C This is Gemini 9. We are starting to leak water, get the ... get the swimmers over here ASAP.

WASPnow over the scene...roger, out.

S/C Roger...we have got you in sight there, we are starting to leak a little water...

WASPpick up that parachute, you can get there right quick. It is just down around the spacecraft. Over.

S/C Okay, when we hit, we kind of sprung a bulkhead and we have a little water, and so as soon as you get..

WASP Gemini 9...we are estimating 45 minutes until pick up. Over.

S/C Well, we are in good shape here.

WASP (Garbled)

END OF TAPE

This is Gemini Control Houston. While we await the pickup, still estimated perhaps 5 minutes from now, Gene Kranz the Flight Director is going around the loop and congratulating each station, each capsule communicator on the job they've done in the last three days. The far Western Pacific stations of course were out of contact for much of the interesting part. They play a vital role leading up to retrofire but they don't always get all of the two-way information as we go over the hill east of the United States. Gene's congratulating each one of them. We imagine that many of them are all even now preparing to make the long flight back to Houston. We've also just been handed a copy of a message which has been sent out to all the Department of Defense Forces which participated in this mission. It reads, "My sincerest congratulations and thanks to all of the Department of Defense Forces who participated in Gemini 9 for their fine contribution to our nations latest space accomplishment. We can all take pride in the high degree of professionalism demonstrated throughout this mission. I am confident that this same proficiency will continue in all of our space missions in the future." It is signed Lieutenant General Leighton I. Davis who is the Department of Defense Manager for Manned Spaceflight Support Operations. General Davis has been with us throughout this mission here in the Control Center in Houston. This is Gemini Control Houston.

END OF TAPE